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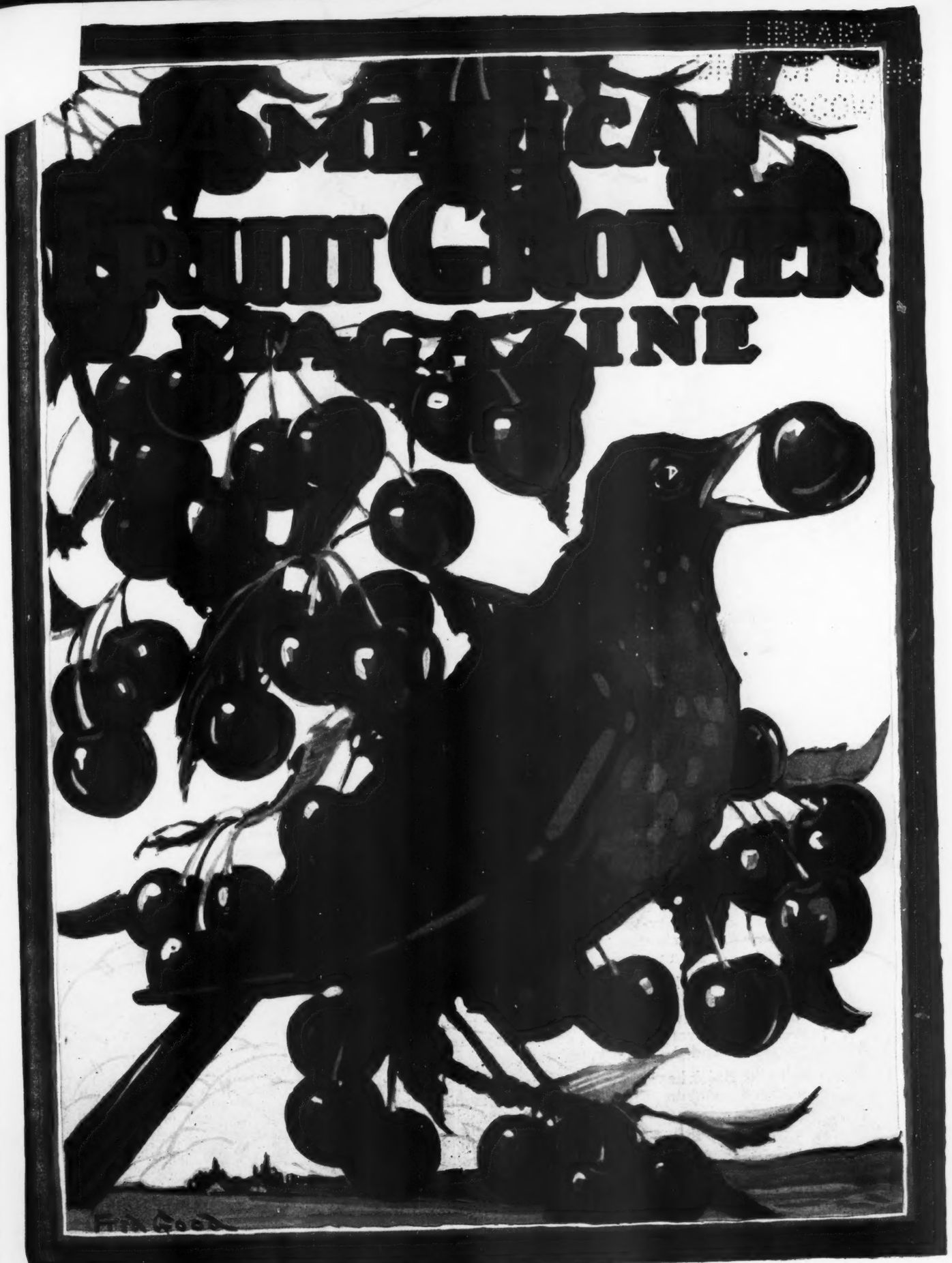

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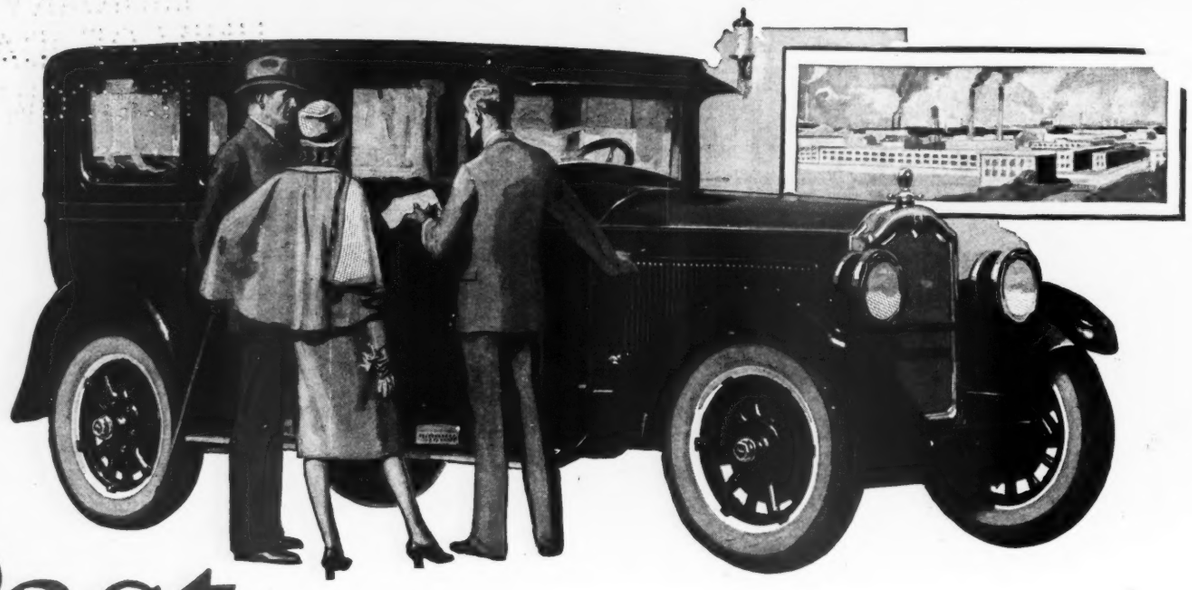

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Packing House Construction and Arrangement

By F. W. Read

California Fruit Exchange

PROBABLY no single phase in the marketing of fruits and vegetables is more indicative of the change in the times than the development of central or community packing houses, contrasted with the old method of packing the fruit on the individual ranches or in the orchards. This change in method has been given great impetus during the past two or three years and has been brought about primarily because of the demands of the market. Fruit growers throughout the nation are rapidly learning the lesson which comes with increased competition from new and growing areas of fruit production. The lesson is one of better standardization and better packing methods.

California alone has witnessed increases in production during the past decade little short of spectacular. Carlot shipments of grapes, for instance, from this one state have increased from less than 10,000 cars in 1915 to the almost unbelievable total of over 70,000 cars in 1925; nearly a crate of fruit per capita for every man, woman and child in the nation! There are over 600,000 acres of grapes planted in California, not to mention the acreage in other states engaged in growing this commodity.

It is unnecessary to burden the fruit grower with long lists of statistics showing increases in the production of fruit. These facts are known to all. The question is, what can be done to improve the situation? At least one answer is to be found in the method of preparing the fruit for market.

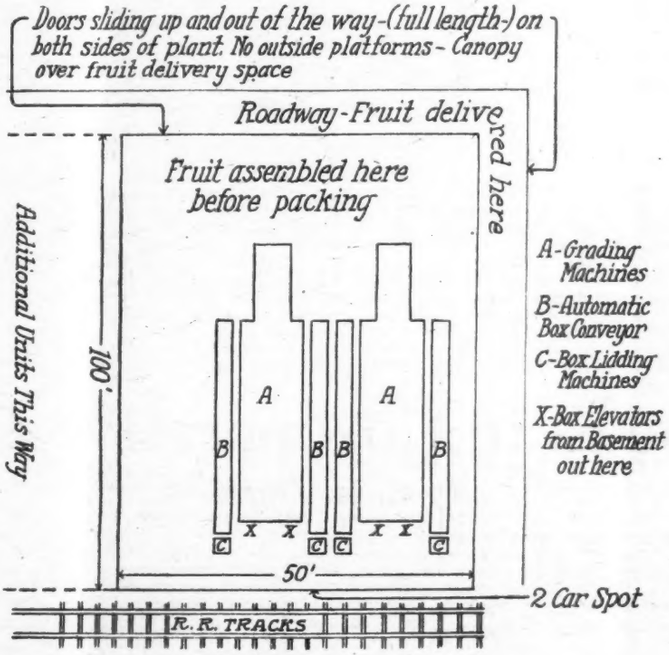
Why Are Central Packing Houses Necessary?

One of the first questions to consider in connection with a community packing house is the economic soundness of the proposition. The answer to this simple question may be found in any big auction or private sales market where fruit is offered to prospective buyers. A trip to New York City with an inspection of the Erie pier, where fruit from every state in the Union is displayed and sold, would soon convince the observant grower that conditions have changed materially in the last 10 years. The same might be said of Chicago, Philadelphia, Boston and every other large and small market in the nation. Ten years ago with the volume of fruit then moving, it was comparatively easy to sell each grower's offering as an independent unit; today, it is totally impossible to move the volume of fruit offered for sale in any 24-hour period, unless it is grouped together in what the trade calls "large lines" of one or two brands. While it is true that in many cases markets are still forced to handle small individual growers' shipments, nevertheless, such offerings suffer in price in comparison with the large, well-graded, branded lines of central packing houses and large shippers.

Take a trip to the New York market on a busy day when 200 or 300 cars of fresh fruit are being auctioned off and witness the careful attention buyers pay to carlot shipments of one or two brands in comparison with cars containing numerous individual growers' lots. And is not this a natural development of the times? There are just so many hours in the day. The opportunity and space to display the fruit in congested market centers is limited. If a sample box or two is representative of an entire carload, the sale is simple and expeditious. The large lines appeal to the moneyed buyers; the small, broken lots attract the peddler trade, or very often the "sharp shooter," who is out to pick up a bargain.

Considerable might be said regarding the methods of handling perishable fruit in the large markets of the country, but it is a fact that the demands and preferences of the buying trade are forcing the producer who expects to stay in business in the face of keen and increasing competition, to group his fruit in large lines of one or two brands. The inevitable answer to this situation is the establishment of central packing houses. Without this development, the small grower, who is in the main the "backbone" of the fruit industry, is at a hopeless disadvantage.

The economic basis, therefore, for the establishment of central packing houses is sound, and the proof of this soundness is evidenced by the spread of such plants in all important fruit areas. In the apple sections of the Northwest, the central packing house has reached a very high stage of development, as well as in the citrus fruit districts of California. It is not at all uncommon to find central packing houses in these areas representing total investments in excess of $100,000. While the packing house plan has perhaps reached a more intensive development on the Pacific Coast than in most other sections of the country, exception should not be made of the splendid progress in New York state, Florida, Georgia, Michigan, southern Illinois, the Ozark country and many other districts where fruit growing has reached a high state of development.



Suggested Packing House Floor Plan

Problems Involved in Central Packing Houses

Before a group of growers decides to build a packing house, certain other features close at home should be analyzed with care. Packing houses do not run themselves; many sound ideas are wrecked when put into practical operation. A "close-up" of the problems involved in the erection and operation of a central packing house is necessary before the venture is launched. In the first place, packing house investments range all the way from $1000 up to $200,000 or more. The first step to take, therefore, is to determine how much fruit will be handled in the projected packing house, for on this point depends entirely the amount and character of the investment. Right here comes a note of warning. A sufficient volume should be assured for at least a two or three-year period to guarantee continuous operation of the plant in season, and the volume should *preferably be in one or two lines of fruit.* Probably more packing houses have failed because the management attempted to handle too many commodities than for any other one reason.

A sufficient tonnage of one or two commodities guaranteed for a sufficient period of years to write off the investment is the first "close-up" essential of a central packing house. In such fruits as pears, peaches, plums, grapes, apples, citrus fruit and like commodities, it is our experience that not less than 50 cars are necessary before even a modest investment for a central packing house is warranted. Fifty cars of fruit will warrant an initial investment of not to exceed $10,000 in plant and equipment, and if the

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Prevention of Grape Diseases

By Arthur S. Rhoads

Florida Agricultural Experiment Station

IN THE first installment of this article, which appeared in the June issue of the AMERICAN FRUIT GROWER MAGAZINE, the writer discussed the cultural and sanitary practices which are essential in the prevention and control of grape diseases. In the present installment, the various methods used for direct control of grape diseases, chief of which are spraying and dusting, will receive consideration.

Spraying and Dusting

Spraying is the most valuable immediate means of preventing the development of fungous diseases and insect pests. The spray applications and materials that have been used in the control of fungous diseases and insect pests of the grape during the past few years have become standard practice and will probably remain so for several years to come. It is indeed fortunate that the life histories of the fungous diseases and insect pests of grapes have been so well worked out with regard to their control. Having perfectly good fungicides and insecticides for the control of these fungous diseases and insect pests, it requires but the intelligent and timely use of these preventatives to protect the vines and fruit from their ravages. The successful control of the fungous diseases, however, may be augmented greatly by a knowledge of their nature and identity and the conditions under which they develop. The fungous diseases attacking grapes are more widespread and destructive in rainy, foggy or warm, humid weather than in dry weather, and a few days of especially favorable weather may so stimulate the growth of the causal organism as to develop an epidemic, which may in turn be checked by a dry spell.

Bordeaux mixture has long been, and probably will long continue to be, the standard fungicide for vineyard spraying. For use during the growing season the 4-3-50 formula is recommended for its preparation. In such a formula, which expresses the proportions of the materials used, the first figure designates the number of pounds of copper sulphate, the second the number of pounds of lime and the last the number of gallons of water. Until recently it has been the practice in the United States to make Bordeaux mixture with a very large excess of lime, the 4-4-50 formula being the one generally recommended for grapes, but even a 3-4-50 formula has been recommended. There is, however, no excuse for having such a large excess of lime unles a very poor grade of lime is used. Of course, when using hydrated lime to prepare Bordeaux mixture one-third more should be used than in the case of stone lime.

Use Arsenates for Chewing Insects

For the prevention of chewing insects, such as flea beetle, berry moth, curculio and various leaf-eating insects, lead arsenate or calcium arsennate should be added to the Bordeaux mixture at the rate of one and one-half pounds of the dry form or three pounds of the paste form to each 50 gallons. For the prevention of sucking insects, such as aphis and leaf hopper, nicotine sulphate should be added to the Bordeaux mixture at the rate of one-half pint of 40 per cent nicotine sulphate to each 50 gallons. If desired to combat chewing insects alone, lead arsenate or calcium arsenate may be used at the rate of one and one-half pounds of the dry form or three pounds of the paste form to each 50 gallons of water. In this case there should be added to each 50 gallons of the spray mixture the milk of lime from slacking two or three pounds of good stone lime in order to eliminate the danger of burning the foliage. When using nicotine sulphate in water to combat sucking insects alone, the efficiency of the solution can be increased by the addition of soap, preferably rosin-fish-oil soap, at the rate of one pound to 50 gallons of the spray solution. If this soap is not available, two pounds of ordinary laundry soap may be added to each 50 gallons of the spray solution instead.

The spreading and adhesive qualities of Bordeaux mixture may be increased by adding some spreader, such as the rosin-fish-oil soap just mentioned (one pound to 50 gallons) or calcium caseinate (three-fourths pound to 50 gallons). The latter, which has proved especially promising as a spreader and stabilizing agent in the case of certain combination sprays, is now put out commercially in powder form under a number of trade names. When using a calcium caseinate spreader with Bordeaux mixture, empty the required amount into a bucket half full of water, stir or beat vigorously for two or three minutes with a wire whip and then pour through the screen into the spray tank containing the Bordeaux mixture while the agitator is running.

Suggested Spraying Schedule

The following schedule is given as a general guide to the number and time of the spray applications to be made, it being, of course, impossible to give a more specific one. While the vines are dormant spray them thoroughly with lime-sulphur (one gallon of commercial lime-sulphur to eight gallons of water), preferably just before the buds begin to swell in the spring. This dormant application is a general sanitary precaution, particularly advisable where anthracnose is troublesome, and it also destroys scale. If scale is not prevalent, copper sulphate (eight pounds to 50 gallons) may be used instead of the lime-sulphur. During the growing season, spray the vines thoroughly with Bordeaux mixture (4-3-50), to which the various insecticides needed have been added, as follows: first, when the shoots are from eight to 12 inches long; second, just after the blossoms are swelling and before they begin to open; and third, after the blossoms have fallen and the fruit has reached the size of buckshot. Subsequent applications should be made at intervals of 10 days to two weeks, depending upon the weather and the severity of the diseases present. If the weather is dry and heavy fog does not occur, applications need not be so frequent, but if the weather is wet and humid or foggy, especially after the fruit has set, the applications should be made at least every 10 days. Spraying should be continued at these intervals until within a month of harvest time of the various varieties. After this date it is preferable to use some one of the sprays leaving a practically colorless residue, such as the copper acetates, whose use was discussed in the November, 1923, issue of this magazine, or soda-Bordeaux mixture.

The latter is prepared by neutralizing copper sulphate with caustic soda (lye) instead of with lime, as in the case of ordinary Bordeaux mixture. While this makes a very cheap and practical fungicide, it has not been used extensively in the past. Soda-Bordeaux mixture may be prepared as follows: Dissolve four pounds of copper sulphate in water and dilute to almost 50 gallons. Dissolve one and one-half pounds of caustic soda (Red Seal or other brand of lye commonly sold in grocery stores) in a small quantity of water and, when dissolved, pour into the copper sulphate solution, stirring thoroughly. Add enough water to make the volume 50 gallons. This amount of caustic soda should make the mixture safely on the alkaline side, so that no burning should result. This fungicide should be prepared by careful weighing and *not by guesswork;* otherwise serious burning may result. It is somewhat caustic to the skin.

Spraying Must Be Timely and Thorough

For the successful prevention of fungous diseases and insect pests of the grape, spraying must be both time-

(*Concluded on page* 17)

Tendencies in Co-operative Contracts

By C. E. Durst

THE QUESTION of how long co-operative contracts should run has always been a mooted one in connection with the organization and early operation of co-operative associations. A good many professional organizers—some with more gift of oratory than knowledge of practical agriculture—have insisted on long time contracts. They have taken the view that associations should be organized on a long time basis and that every grower should be tied down by an iron-bound contract. Business corporations, they point out, have insured themselves perpetual use of money by the selling of stock, and farm organizations, in their opinion, should be assured a continuous supply of products over a period of years so that they can thoroughly establish themselves. With such contracts in operation, directors and managers can plan the future business of the association with more confidence than if contracts are used that can be canceled each year.

This viewpoint seems logical, and it has appealed to many farm leaders. As a result, many associations have been organized on this plan, and they have now been operating long enough to show how the method is working. While the method seems sound from a purely business standpoint, it lacks one important feature. It fails to recognize certain fundamental principles of psychology that are extremely important in farm organization work. Farmers and fruit growers do not want to tie themselves down with long time contracts, and because of the long time contracts, many growers have stayed out of co-operative associations. They have seen the inefficiencies of many co-operatives, as well as the lack of capable management, and they have been reluctant to enter into iron-bound contracts for the handling of their products by such associations over a long period of years.

Service is the Most Important Factor

It has been found in practice that no matter how long the duration of the contracts, and no matter how iron-bound they may be, and no matter how many lawsuits may be conducted to enforce them, a co-operative association cannot live except as a result of service rendered to members. When satisfactory service is rendered, a co-operative will live and grow, no matter whether contracts are on a one-year or on a five or 10-year basis. On the other hand, the lack of satisfactory service will soon result in the death of an association, no matter what may be the nature of the contract.

The experiences of many associations have proved this point. One of the large tobacco associations in Kentucky has suspended operations for the present year, notwithstanding the fact that it is using a five-year contract. Numerous contracts were broken and many lawsuits were instituted. There were so many lawsuits in prospect, in fact, that the association leaders apparently saw the futility of trying to enforce all of them. Whether or not the association will ever be gotten into successful operation again is a question. The Minnesota Potato Growers' Exchange had about the same experience after one year of operation. The California Prune and Apricot Growers' Association has been operating on a long time contract, and its leaders tried to reorganize the association on that basis recently. They failed, however, to secure the necessary tonnage, and the contracts were changed to a one-year basis, after which the reorganization was accomplished. The National Pecan Growers' Exchange, with headquarters at Albany, Ga., has had a five-year contract in operation, and while it has had no trouble, it changed to a one-year contract before conducting its recent reorganization campaign. The California Fruit Growers' Exchange has been operating on a one-year basis for many years, having learned by experience that this plan is the best. It is certainly unfortunate that many co-operative leaders have not seen fit to profit from this valuable experience of probably the most efficient co-operative in the world.

Yearly Withdrawal Privilege Gaining in Use

As a result of the experiences of the past few years, there is now a strong sentiment toward the use of contracts extending over a fairly long period of years, with the grower having the privilege of canceling the contract during a certain specified period each year. A grower thus has a chance of continuing or withdrawing once each year. If he is satisfied, he says nothing; if he is dissatisfied, he gives notice of withdrawal. He risks only one year's crop at a time.

After all is said and done, it must be recognized that the life of a co-operative depends, first, on understanding and confidence on the part of its members, and second, on results rendered by the co-operative. No matter what kind of contract is in operation, a co-operative cannot live if these essentials are ignored. Directors and managers should plan to educate their members in co-operative principles so that they will understand what they are doing. They must also conduct themselves in a manner that will merit the confidence of members. Along with these things, they must make the co-operative furnish results. A co-operative that will recognize these principles and put them into practice is bound to succeed, no matter what kind of contract it may have.

Conclusion

Please understand that I do not disapprove of the use of contracts. I think they are an essential feature, especially in the early life of co-operatives. I believe, furthermore, that they should be enforced in justifiable cases. I do not believe in any weak, vacillating policy regarding members who fail to fill their reasonable obligations, but I believe at the same time that a co-operative needs other things for success besides long time contracts. A long time contract with the privilege of cancelation during a certain period each year is the best form of contract for a co-operative association, in my opinion. It may not be the best from a theoretical standpoint, but it is the best form to use in practice.

Peaches and the Peach Industry

First Installment—By H. P. Gould

United States Bureau of Plant Industry

THE PEACH in common with most of our tree fruits is of alien origin. However, its American ancestry traces back so far that present-day peach varieties might claim membership in the Daughters of the American Revolution, the Colonial Dames, and almost in the Mayflower society. Peach growing began to develop in America substantially with the beginning of the development of the country.

It seems a strange fact that the "cradle of the peach," like the cradle of the human race, is unknown. It does not occur in its native wild state in any part of the world so far as can be determined. True, it has been found in Europe and perhaps elsewhere in what appears to be a wild state, but evidence points to its having escaped from cultivation in all such instances.

Peach Probably Originated in China

At one period the native habitat was supposed to be Persia, as indicated by the botanical name of the species, *Prunus Persica*. That belief no longer holds, however, as certain evidence tends to point to China as the more probable part of the world from whence it came. The time of its dispersal antedates recorded history.

The coming of the peach to America is not definitely recorded, but that it came soon after the founding of Jamestown and Plymouth Rock is certain. Here and there in early colonial literature and letters, there are interesting allusions to the peach. For instance, as early as 1629, or very soon thereafter, the governor and company of the Massachusetts Bay in New England included "stones of all sorts of fruit, as peaches, plums, filberts and cherries," in a memorandum of things to provide for New England.

In 1633 a Dutch sea-captain recorded the presence of apple, pear and cherry trees in a garden on the James River near Jamestown, and peach trees were planted around the house. As early as 1635, mention was made of "pears, apples, and several sorts of plummes, and peaches in abundance and as good as those in Italy," in gardens and orchards in New England. That peaches were growing in Pennsylvania, New Jersey and elsewhere long before the close of the seventeenth century is equally certain.

As early as 1733 peaches were so plentiful in Georgia that they were fed to the hogs "in great quantities," and they were "so delicious that whoever tastes them will despise the insipid, watery taste of those we have in England." Other similar references to peach growing in early colonial times occur, though widely scattered in the records of those days.

Culture Spread Rapidly in Eighteenth Century

The rapidity with which peach growing developed during the eighteenth century is largely a matter of conjecture rather than one of record. Early in the nineteenth century, however, there were orchards that would be considered even today of pretty good size. For instance, about 1800, one Thomas Robinson planted a peach orchard in Anne Arundel county, Maryland, about 20 miles south of Baltimore, which consisted of some 18,000 to 20,000 trees. These were all seedlings and the fruit was used in making brandy. Other smaller orchards planted within a radius of five or 10 miles of Baltimore followed within the next few years, the fruit of which was marketed in that city. Apparently a peach industry sprang up on the eastern shore of Maryland within a comparatively few years, though just when the first commercial orchard was planted does not seem to be recorded. However, it is said that an orchard of 6000 trees was planted about 1830 by Maj. Phillip Reybold in Kent county, near the head of Chesapeake Bay. In any event, he is known to have become an extensive planter within the next few years. About 1830, another grower planted 50,000 trees in Cecil county, Maryland, along the Sassafras River.

The first great period of commercial peach planting appears to have occurred from about 1856 to 1865. During this period Col. Edward Wilkins of Kent county, Maryland, planted some 1500 acres to peaches along the Chester River. Plantings were also made along the water courses in Cecil, Kent and Queen Anne counties until there was almost a continuous forest of peach trees extending back from the water for from one to two miles.

Figure 1.—This stake marks the spot near Marshallville, Ga., where the original Elberta peach tree stood. (Courtesy Bureau of Plant Industry, U. S. D. A.)

The interior sections of the eastern shore of Maryland did not feel the impetus of the expansion until about 1867 to 1875. Then from 1875 to perhaps 1885 or 1890, the eastern shore of Maryland and Delaware represented the great peach growing region of the entire Atlantic seaboard.

It was in 1875 that the first commercial peach orchard was planted in Washington county, Maryland, where, during the next 25 years, many thousands of trees were set out.

The commercial canning of peaches began about the middle of the nineteenth century.

This very brief and fragmentary sketch of the development of a commercial peach industry is more or less typical of what took place in other sections later on, or to some extent simultaneously with what was going on in Maryland and Delaware.

The Coming of the Elberta Peach

It is difficult, even impossible, to imagine what the peach industry would be today had the Elberta variety not come to light. This peach stands unique among all fruits in its contribution to a great industry. There is no other instance in the pomology of the country where a major fruit industry widely distributed has been based so largely on a single variety as in the peach industry on the Elberta. True, the orange industry of California developed very largely on a single variety—the Washington Navel. It was this variety which gave impetus in the eighties to the extensive development of citrus growing in California, and until within the past 10 years or so, the bulk of the orange crop shipped in any year from that state was composed of the Washington Navel. But that has to do with a fruit having a limited geographical range of culture. Besides, at the present time about as many carloads of Valencia oranges come out of California annually as of the Washington Navel. Other examples like this are not hard to find.

The Elberta peach, on the other hand, represents a kind of fruit grown to a greater or less extent in nearly every state in the Union; it is of commercial importance in more than two-thirds of them. In nearly every section throughout the country from which peaches are shipped, the Elberta variety comprises the bulk of the crop. To such an extent does it dominate the peach industry that any further profitable expansion of the industry requires, substantially, the finding of locations where this variety ripens during a period when the markets are not already oversupplied with it from other sections more advantageously located.

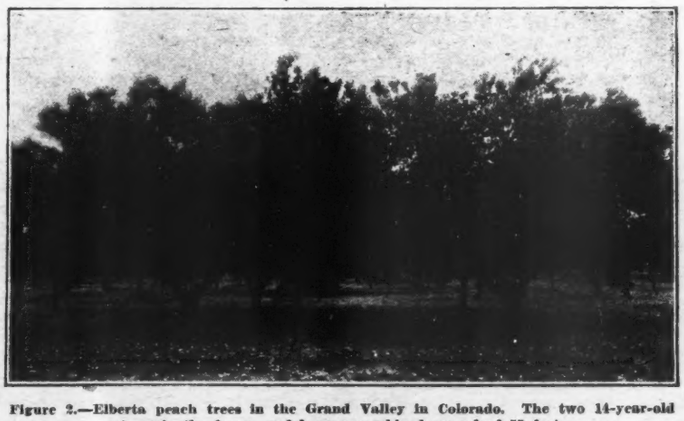

Figure 2.—Elberta peach trees in the Grand Valley in Colorado. The two 14-year-old trees in the foreground have a combined spread of 55 feet

An apparent exception to this general statement may exist in California, where in some localities the Muir and Lovell varieties, and certain yellow clingstone sorts, are largely produced. But these are special purpose varieties grown for drying and canning and are rarely shipped in the fresh state. Besides, if for any reason peaches are desired in California either for drying or canning in addition to those sorts planted especially for these purposes, the Elberta is the variety most commonly used.

Though possessing some outstanding faults, the Elberta is indeed a remarkable variety—remarkable in its tremendous range of adaptability, and in the highly satisfactory degree in which it fulfills the requirements of a market peach. If one could conceive of its dropping out of the industry all at once, it would amount to but little less than the dropping out of the peach industry at the same time.

The original Elberta tree sprang from a Chinese Cling seed that was planted in the fall of 1870 by the late Samuel H. Rumph, Marshallville, Ga. Trees of Early Crawford, Late Crawford, Oldmixon Free and Oldmixon Cling stood near the Chinese Cling tree which was the seed parent of the Elberta. Mr. Rumph is said to have believed it to be a cross of a Chinese Cling and Early Crawford. The variety was named Elberta after Mrs. Clara Elberta Rumph. Figure 1 shows a stake that marks the spot where the original Elberta tree stood. The tree has been dead for some years. Figure 2 represents two Elberta trees 14 years old in the Grand Valley in Colorado. The spread of the branches of these two trees is 55 feet.

It is of passing interest to note in this connection that another highly important and widely grown variety came from the same collection of peach pits as did the Elberta. A pit from the same Chinese Cling tree that produced the Elberta was given in 1870 to L. A. Rumph, and from it sprang the tree which later was named Belle (Belle of Georgia). Because of its characteristics, it has been generally assumed that one of the Oldmixon varieties (free or cling) was the pollen parent of the Belle. Thus, from the same lot of Chinese Cling seed came these two most valuable varieties—Elberta and Belle.

The Coming of the Refrigerator Car

One cannot think of the annual peach crop with its transportation problems apart from the refrigerator car service, and yet that service is a comparatively recent development. It is obviously true that without refrigeration in transit, it would be impossible to ship long distances to market such a perishable commodity as the peach. As a matter of fact, a very large proportion of the annual peach crop of from 32,000,000 to 55,000,000 bushels that is marketed is shipped in refrigerator cars.

The development and expansion of the peach industry into many new regions in the past 30 or 35 years have been coincident with the development and perfection to a high degree of the refrigerator car and its service. The expansion of the industry would have been quite impossible without such a system of transportation whereby the crop may be placed in good condition in markets many miles distant from large centers of production.

The refrigerator car, as we now know it, is a comparatively new feature of transportation. The icing of freight cars in some manner or other for the shipping of meat, and of fruit to a limited extent, had received attention for 20 years or more previous to the advent of the modern refrigerator car. About 1887, F. A. Thomas, in conjunction with the late Parker Earle, then of Cobden, Ill., put the refrigerator car service on a basis that made it practicable and effective for the handling of fresh fruit. To Mr. Thomas apparently belongs the credit of providing a through service to destination under one management, with facilities for re-icing the cars when necessary in transit[1]. The plan amounted to a private car line for fruit transportation operated in a manner similar to that

[1]United States Department of Agriculture Yearbook, 1900, "Influence of Refrigeration on the Fruit Industry," by William A. Taylor.

(*Concluded on page* 24)

American Fruit Grower Magazine
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Arbitration Plan Will Reduce Unwarranted Rejection of Perishables

IN OUR February issue we discussed the arbitration plan for the fruit and vegetable industry being proposed by the United States Bureau of Agricultural Economics. This plan is simply an extension of that used successfully during the war. The standard rules and definitions of trade terms will be continued, such changes to be made from time to time as conditions justify. The new proposal calls for a description of official grades of the department to be used in connection with sales of produce unless the products are sold under established brands based on written specifications. In the event of disputes, differences between shippers and receivers are to be referred to the Secretary of Agriculture. Grievances occurring in connection with sales and purchases may be investigated by the department with the object of developing methods of preventing them. The department proposes to enter into a voluntary co-operative agreement with each shipper, dealer, broker, produce merchant and distributor, and to maintain an approved list of those who have entered into such an agreement.

One of the main purposes of the proposal is to place more of a check on unjust rejections of cars of perishables than has been possible in the past. A reduction in the number of unwarranted rejections would prove an advantage to all shippers and dealers who desire to operate on a fair and square basis.

The proposal of the department has had the endorsement of several produce dealers' organizations, of many individual dealers, of numerous co-operatives and of large numbers of individual growers. All of these feel the new move would prove a potent factor in promoting improved standards in the produce trade. No legislation was necessary to put the movement into operation, since laws in operation authorize the Department of Agriculture to enter into co-operative understandings of this kind.

Everything had been going along fine for the measure, and it looked for a time as though no serious opposition would develop. Recently, however, strenuous opposition has arisen. A small but well organized minority of produce dealers is doing everything possible to prevent the plan from going into operation. As a result of their activity, Senator Norris of Michigan introduced a resolution in the Senate which proposes to restrain the Department of Agriculture from putting the proposition into operation. Hearings have been held in Congress and both sides of the proposition have presented their arguments. A. U. Chaney, manager of the American Cranberry Exchange, J. W. Davis of the Fruit Dispatch Company and others championed the side of the department.

The Michigan Fruit Growers, Inc., representing about 30 local fruit co-operatives, has sent urgent telegrams to Senator Norris and other Michigan congressmen requesting that they withdraw their opposition to the measure.

The new arbitration plan proposed by the Department of Agriculture is a thoroughly good one and ought to be put into operation. It will help to lower the number of unjust rejections, and this will operate to the advantage of every grower and every dealer who is trying to do business on a clean basis. It may be too late to do anything when this statement reaches you, since the resolution may be acted upon at any time. However, if the matter is still before Congress, we urge every reader to immediately wire or write his senators and representatives and urge them to favor the arbitration plan for fruits and vegetables proposed by the United States Department of Agriculture.

Series of Articles on Peach Culture

THE COUNTRY will this year harvest one of its largest peach crops in history. Practically every important peach growing section of the country will produce a good crop. The interest in peach growing, therefore, is very widespread at this time, and for this reason we have arranged to publish a series of articles on this important crop.

H. P. Gould of the United States Bureau of Plant Industry will write this series of articles. Mr. Gould has been interested in peach growing for many years. He has studied the peach in all parts of the country and has had an opportunity to witness at first hand every important development in the building of the peach industry in America. He wrote a book on peach culture several years ago.

We know our readers will welcome a series of articles on the peach by such an authority. The first installment is presented on page five of this issue. Additional installments will appear in succeeding issues until the series is completed.

Imports Exceed Exports in 1925

AN EVENT of great economic importance took place last year. The United States imported foodstuffs to the value of $929,463,000, while the exports reached a total of only $897,179,000. The imports exceeded the exports by $32,284,000. This is the second time in the nation's history that foodstuff imports have exceeded the exports in value.

The balances in favor of imports were pronounced last year in the cases of coffee, tea, cocoa, spices, and sugar and related products. The import balances were comparatively small in the cases of vegetable fats and oils, dairy products and eggs, and nuts.

The high value of imports is due chiefly to the large importations of coffee, tea, cocoa, spices, and sugar and related products. The first four of these products will always be imported in large quantities, but we can and should grow more sugar in this country. By so doing, we shall diversify our production and tend to relieve excessive production of other crops.

Our exports of principal foodstuffs, such as grains, meats and animal fats, still exceed the imports by comfortable margins. However, we are consuming more of these foods every day, and since population is steadily increasing, the time may come sooner or later when we shall be importers of these products also. If that time comes, what will happen? Some persons have held the view that such a situation would solve the problem of American agriculture and that farmers would then be assured good prices for their products. Other persons, however, fear that the consuming public of the country, which now possesses the voting power, will then gradually remove the tariffs on food products so that cheap food can be brought in from other countries. If such a thing should take place, the position of American agriculture would be made worse in comparison than it is today.

Otto H. Kahn's Analysis of the Agricultural Situation

THE FOLLOWING statement is a most pertinent one in view of the situation confronting agriculture at the present time. The principles described are absolutely sound and their acceptance by our legislators would result in the prompt passage of laws that would place agriculture in a more equitable position. The statement was made by Otto H. Kahn, noted banker of New York City, in an address delivered before the Chamber of Commerce at Richmond, Va.

"Both justice and self-interest demand of the community at large that every legitimate endeavor be put forth to the end that the farmer's grievances be redressed. If that redress can only be accomplished by methods which, while practicable and economically warrantable and promising to be effective, are novel and perhaps unpalatable to the established ways of business, then the less important will have to yield to the more important, i. e., business convenience and customs to the rehabilitation of the farming industry.

"Unless well-considered, sincere and earnest efforts are promptly put into operation by Congress, within the limits of economic soundness and practicability, to accomplish the object in view, the danger looms ahead that a large section of the farming vote may succumb to the specious persuasiveness and false promises of the well-meaning, self-deceived purveyor of political and economic nostrums and delusions, often disproved but ever resurging, or of the cunning demagogue and fomentor of class animosity.

"It is not sufficient answer to the farmer's complaint to refer him sternly to the rigid functioning of the law of supply and demand and to the doctrine of the survival of the fittest; because in reply the farmer will contend that, in other respects, for reasons which seemed valid to Congress, we have not scrupled to interfere, through acts of government and otherwise, with the untrammeled workings of that law and that doctrine; and he will and does claim that we either adhere to them strictly all around or give him the effective advantage of dispensations similar to those which have been granted in the case of other callings.

"As to the argument that the adoption of measures sufficiently thorough-going to give real relief to the farmer might set a dangerous precedent, it seems to me that aversion against, or apprehension of, establishing a precedent is never a valid reason for failure to do that which is justly called for. I feel assured that we may rely—and, indeed, under a popular system of government we must rely—upon the soundness and watchfulness of public opinion to see to it that precedents are not harmfully misapplied or abused."

Essentials in Strawberry Culture

PART IV

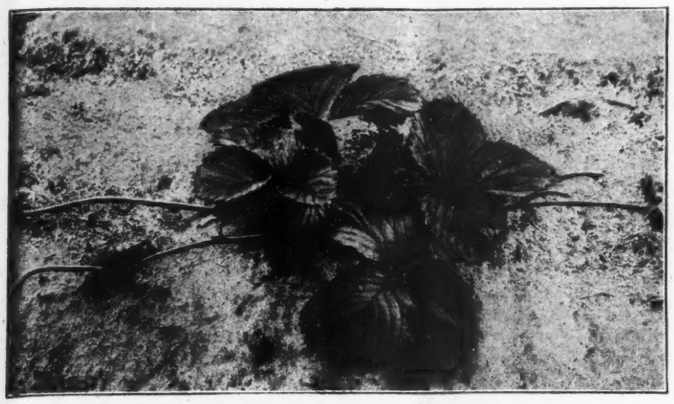
Summer Care and Renewal of Strawberry Fields

By George M. Darrow

United States Bureau of Plant Industry

IN THE second article of this series we discussed the root of the strawberry and its functions. In most of the United States the plants are set in early spring; they grow throughout the season; they send out many runners during the summer; they form their fruit buds in the fall; and the following spring they send out new leaves and the flowers which develop into fruit.

For the matted row system, about 6000 plants are set to the acre and, with a good stand of plants, there will be from 75,000 to 200,000 to the acre by winter, the number depending upon the variety, soil fertility, etc.



A young plant with three runners ready to take root. The rooting of such runners may be hastened by pressing them into the soil with the fingers or by covering soil over them with a hoe

There are some experimental results which are worth noting and on which the discussion of cultural practices will be based. In the first place, many experiments have shown that the total yield from fields where the plants are kept in hills, is much less than that from fields having the matted row system. Under most conditions this will prove correct.

Chandler has shown that in Missouri, when the flowers are removed after setting, the plants form more runners than those which are allowed to blossom and fruit.

Early Runners Most Valuable

Davis of the Canadian Department of Agriculture has recently published the results of some rather extensive experiments with the Parsons strawberry, in which he showed the greater value of early runners as compared with late formed ones. He kept a record of the date when each runner rooted and the number of fruits produced by each runner plant the following spring. Runner plants rooting about the middle of August produced an average of 16 fruits, while those formed as late as October 20 produced on the average only five fruits. He concludes that in Canada the most profitable period for the rooting of runners is between late July and early September.

The length of the growing season varies in different parts of the United States; some regions have particular weed problems, such as morning glory, quack grass, crab grass or chickweed, which must be considered; certain varieties send out runners early, others later in the season; some sorts make few runners, others great numbers; soil fertility, soil type and soil moisture content all affect runner production; and all these considerations make impossible any specific directions that will apply everywhere. Under most conditions, however, plants should be set so as to get a full stand of early rooting runner plants. Apparently, whatever enables the grower to secure a large number of early runner plants is contributory to best results.

Fertilizer Stimulates Early Growth

In order to secure a good stand of runner plants by midsummer, it may be necessary to use stable manure or a fertilizer carrying nitrogen, such as bone meal or cottonseed meal or a good complete fertilizer; on the other hand, in many sections and on many soils no fertilizer will be required for varieties such as Dunlap and Missionary, and any nitrogen carrying fertilizer might lessen the yield. In much of the northeastern United States probably each grower or each small locality will need to determine the local need of the use of such fertilizer. In most of the South, where the Klondike and Missionary varieties are the only commercial varieties, it may be that large regions may safely adopt a more or less standard practice, though not enough is known about the use of fertilizers to make this possible yet.

To secure an early stand of runner plants probably early, timely and careful setting of plants in good condition is the most important of all practices for all northern states. All experienced growers know that their earliest planted areas on soil in good condition make the best stand of plants; in fact, rarely is there a missing plant from such an area, while areas set only two weeks later may hardly contain a live plant. The writer has frequently had such experiences.

Encourage Early Runners to Set

An early-set, vigorously growing plantation in Maryland will begin to send out runners by June. Under most conditions probably all these runners should be encouraged to root. Some careful growers, who have appreciated the importance of early runner production, go through their fields placing the runner tip in the soil where it is to root. Growers in the section south of Boston, Mass., have used this practice in raising the fancy Marshall variety. In California, the practice is also frequently used. Whether it will pay in other sections will depend on the value of the final crop, the character of the soil and on various other conditions. Where a fancy berry is grown, this extra labor will often pay.

Frequent cultivation, beginning soon after planting, is essential with the strawberry. It is especially necessary to insure a mellow soil in which the runner may root. A hard-baked crust may not allow the roots to penetrate the soil at all.

Spacing Plants

The runner plants should finally stand six to eight inches apart in the matted row. In many sections, where the foliage is not heavy, varieties like the Dunlap and Klondike may be allowed to root closer together. Where the foliage is dense, the plants should not be closer than eight inches, while even 10 inches may be preferable. In hoeing and cultivating, much can be done to place the runners so that such a stand will be made without getting on the hands and knees to place each runner.

If a full stand of plants has been secured before September 1, all later runners should be removed. The Howard 17 (Premier) variety has a characteristic which makes it valuable to the grower. It makes few runners late in the fall. On the other hand, the Klondike and Dunlap make many late plants. Mr. Davis reported that in his experiments with the Parsons variety in Canada over 70 per cent of all runner plants were formed after September 1 by the Parsons (Gibson) variety. Nurserymen expect to secure double the number of plants which are to be found in the fields on September 1. This indicates that for those who have conditions where a full stand can be secured by September 1, a variety like Howard 17 is to be preferred, as it saves the labor of removing late runners. Where early runners cannot be secured, many late runners will, of course, produce as much as a smaller number of early ones.

In the experiments made by Ruef and Richey in Iowa, which were mentioned last month, they found winter injury much more serious in late formed runner plants than in early formed ones. They give the following table:

WINTER INJURY IN DUNLAP STRAWBERRY

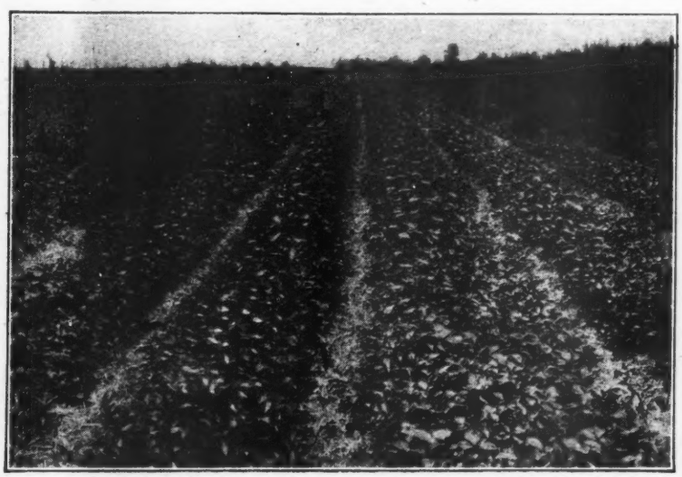
Position of plant as regards mother plant.	Number of plants winter killed.	Percentage winter killed.
First	0	0
Second	2	4
Third	15	30
Fourth	45	90
Fifth	48	96

Nearly all of the fourth and fifth plants, which are the last formed ones, winter killed. It is a matter of common observation also that the last formed plants often "heave" entirely out of the ground in soils that freeze and thaw repeatedly.

Little need be said about tillage. As the strawberry continues rapid growth until freezing weather, clean cultivation should be continued until that time. This is especially important in regions which have more or less open winters where winter weeds may sometimes make a considerable growth before the harvest season is over.

Tillage is not generally practiced in the spring in the year-old fields which

(*Concluded on page 26*)



Dunlap strawberries grown under the wide matted row system at Janesville, Wis. (Photographed July 1, 1916.)

Marshall strawberry field on Vashon Island, Washington, grown in single rows by the single hill system. The rows are two feet apart and the plants 12 inches apart in the rows. After the crop is harvested, it is customary to trim the tops off with a sharp hoe, scythe or mower

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Government Estimate of the Fruit Crop

APPLES (TOTAL CROP).[1]

Principal producing states.	Condition June 1. 1926. %	1925. %	10-yr. avg. %	Harvested production in thousands of bushels. 1925	5-yr. avg. 1921–25
Maine	73	91	84	3,305	2,871
Massachusetts	91	84	84	3,160	2,791
New York	85	74	79	26,829	24,666
Pennsylvania	86	64	72	6,970	7,767
Ohio	82	60	65	6,300	7,147
Illinois	72	59	64	7,000	6,600
Michigan	74	68	75	9,000	9,265
Missouri	65	61	61	4,100	5,070
Virginia	70	45	53	7,844	8,375
West Virginia	76	40	52	4,185	5,110
North Carolina	68	60	60	3,192	3,767
Arkansas	62	68	61	4,070	2,699
Idaho	80	78	73	5,500	4,336
Colorado	92	78	76	3,200	3,337
Washington	82	76	86	28,700	27,707
Oregon	90	75	81	5,400	6,573
California	79	50	75	6,016	7,954
U. S. total	78.3	63.4	69.5	164,616	168,082

PEACHES (TOTAL CROP).

Principal producing states.	Production in thousands of bushels. Indicated by condition June 1, 1926.[2]	Harvested. 1925.	Five-year average, 1921–25.
New York	2,357	1,920	2,180
New Jersey	2,523	1,740	1,856
Pennsylvania	2,019	600	1,226
Ohio	1,776	1,100	1,049
Illinois	2,220	600	670
Missouri	1,427	870	1,014
North Carolina	1,463	1,500	1,183
South Carolina	749	740	700
Georgia	8,178	7,304	6,469
Tennessee	1,358	1,415	1,329
Alabama	1,002	1,312	1,072
Mississippi	425	712	474
Arkansas	1,544	2,200	1,697
Oklahoma	154	950	1,255
Texas	1,863	1,750	1,894
Washington	1,044	870	869
California	20,149	16,251	15,164
U S. total	58,640	46,565	46,904

PEARS (TOTAL CROP.)

Principal producing states.	Production in thousands of bushels. ndicated by condition June 1, 1926.[2]	Harvested. 1925.	Five-year average, 1921–25.
New York	2,287	3,045	199
New Jersey	593	512	478
Pennsylvania	711	468	501
Ohio	426	354	318
Indiana	326	209	219
Illinois	739	510	385
Michigan	861	450	859
Missouri	402	342	329
Kansas	137	165	162
Delaware	373	180	209
Maryland	369	280	256
Mississippi	142	189	165
Texas	493	386	401
Colorado	592	510	496
Washington	2,829	2,300	2,040
Oregon	2,032	1,500	1,308
California	8,279	6,667	5,514
U. S. total	23,645	19,820	17,707

[1]First forecast of production of apples for 1926 will be in July.

[2]Interpreted from condition reports. Indicated production increases or decreases with changing conditions during the season.

CONDITION OF CROPS IN CALIFORNIA AND FLORIDA ON JUNE 1, 1926, WITH COMPARISONS.

	Condition (Per Cent) June 1, 1926. %	May 1, 1926. %	June 1, 1925. %	June 1—10-yr.-avg., %
Almonds, California	91.0	90.0	56.0	66.3
Apricots, California	62.0	62.0	63.0	66.1
Cherries, California	70.0	66.0	49.0	70.9
Grapefruit, Florida	83.0	90.0	77.0	76.7
Lemons, California	94.0	97.0	82.0	88.2
Limes, Florida	80.0	85.0	84.0	75.6
Olives, California	74.0	....	86.0	89.7
Oranges, California	87.0	93.0	88.0	91.5
Oranges, Florida	84.0	93 0	78.0	78.9
Pineapples, Florida	55.0	55.0	86.0	75.4
Plums, California	92.0	....	81.0	78.7
Prunes, California	58.0	....	68.0	74.5
Walnuts, California	58.0	....	92.0	86.3

Cover Crops in the Orchard

By F. P. Cullinan

Purdue Agricultural Experiment Station

THE TERM cover crop is taken generally to mean a crop that is seeded after the cultivation has ceased for the season and which is expected to make some growth before winter sets in. It may be a crop which will be killed by the first freeze, such as oats, millet, soybeans and cowpeas; or, one that lives over winter and serves as a protecting cover for the soil, such as rye, vetch and crimson clover.

The cover crop serves a variety of purposes, any one of which may be of importance to the fruit grower, depending upon the type of soil, location and natural environment of his orchard.

Perhaps the greatest use of the cover crop is in conserving the nitrogen supply in the soil. Continuous cultivation tends to "burn out" the humus in the soil. Cover crops growing on the soil after cultivation has ceased will utilize nitrogen that would be lost from the soil and return it when the cover crop is disked under in the fall or spring. If the cover crop is a leguminous one, such as soybeans or vetch, additional nitrogen will be added to the soil when turned under. In this way there is a tendency to conserve the nitrogen supply which is so important and essential in the growth and production of fruit trees.

The tillage cover crop system is a relatively inexpensive method of building up the soil in young orchards. Certain clay soils that are low in humus may be greatly benefited in physical condition by the use of cover crops. These soils puddle easily when worked in the spring and bake during the dry summer months. A crop such as soybeans or cowpeas sown in June in young peach and apple orchards should make a good growth by late August. A small strip may be left on either side of the tree row for later cultivation. This crop can then be disked under and a crop that lives over winter can be seeded by early September. Usually such soils which are low in organic matter will wash badly in winter and early spring and especially so if the land is rolling. A winter cover crop under such conditions is very important and essential. For this purpose rye is one of the best. It grows rapidly in the spring and the grower should plan to disk it under before it is knee high. If this is not done, the rapidly growing rye will deplete the soil moisture and nitrogen at a time when it is most needed by the trees.

In bearing peach and apple orchards the cover crop program will be different from that in the young orchards. The bearing peach orchard seems to do best when given frequent cultivations to keep down weeds and grass, up to the time the fruit is harvested. A cover crop may then be sown after the last cultivation. In the bearing apple orchard, the proper time for seeding the cover crop is not definitely known. However, with orchards on thin soils or with gravelly sub-soil, it would appear wise to delay the seeding of the cover crop until late July or early August. Cover crops seeded in the agricultural experiment station orchards at Lafayette, Ind., which were planted on soils underlaid with gravel, have made satisfactory growth in most years when seeded about August 1.

Another important use of the cover crop is to check the growth of trees in the fall in order that they may be "hardened" for early winter temperatures. This may be of great importance in young peach and apple orchards. Many young peach trees two to five years of age were showing quite a succulent terminal growth in the late fall of 1925. This was due to the fall rains following the relatively long period of dry weather. A very large percentage of all such terminals were killed back a distance of 10 to 15 inches at Lafayette. Certain varieties of apples also have a tendency to ripen their wood late in the fall and crotch injury and trunk scald are not infrequent on such varieties which are caught in an early freeze.—*Hoosier Horticulture.*

Massachusetts Apple Survey

THE MASSACHUSETTS Agricultural Experiment Station conducted an extensive study of the apple industry of the state last summer. The owners of the orchards visited reported a total of 967,000 trees, over 600,000 of which were in bearing. More than 75 varieties were reported. The Baldwin is by far the most important variety, having 45 per cent of the bearing trees and over 50 per cent of the commerical crop.

The McIntosh ranks second with 117,000 bearing trees or 20 per cent of the total, and 13 per cent of the apples grown. Nearly 85 per cent of the bearing McIntosh are under 15 years of age, which accounts for the relatively low yield. In view of this fact and the large number of trees not yet bearing, the production of McIntosh apples may reasonably be expected to increase 100 per cent within the next 10 years. Only 28 per cent of bearing Baldwin trees are under 15 years of age, but there will probably be an increase of about 20 per cent in Baldwin production within the next decade. The early varieties, such as the Transparent and Duchess, are relatively unimportant both as to number of trees and production. Only about five per cent of all bearing trees fall within this class.

The Wealthy is third in importance so far as bearing trees are concerned, but the Gravenstein, with nearly the same number of trees, produces almost twice the crop. Coupled with the fact that many Wealthy trees are fillers, this gives the Gravenstein third place as a commercial variety.

New Plantings

The past 10 years have been years of very heavy plantings, over 460,000 trees being set. The plantings of Baldwins and McIntosh have been about equal. Since 1920, however, there has been a decrease in the rate of planting. From 1914 to 1919 approximately 95,000 McIntosh and 70,000 Baldwin trees were planted. During the period since 1920, there have been only 61,000 McIntosh and 55,000 Baldwins planted, a relative decline in planting, for the five-year period, of 35 per cent for the McIntosh and 20 per cent for the Baldwins. Plantings of all varieties have declined 20 per cent in the same period.

Of the winter varieties, the Delicious shows the greatest per cent of increase in plantings, some 36,000 trees of this variety having been set in the last 10 years, practically all being permanent. Other winter varieties have been planted in considerable numbers, the Wagener being a favorite. The older varieties, such as Greening, Spy and Russet, are rapidly disappearing, few new plantings being reported.

Fillers

The Wealthy is the variety most commonly planted as a filler. Out of a total of 34,000 bearing Wealthy trees, 15,000 were reported as fillers to be cut within the next five to eight years. In the younger plantings over two-thirds of the Wealthy are fillers. Relatively few McIntosh have been set as fillers, and where this was done some years ago, growers are cutting out the permanents and leaving the McIntosh. Wagener is also popular as a filler, nearly all the Wageners planted being used for that purpose. Duchess and Transparent have also been used in some quantities, about one-third of the bearing trees of these varieties being fillers.—*Bulletin 226, Massachusetts Agricultural Experiment Station.*

Horticultural Field Day in Missouri

By T. J. Talbert

University of Missouri

THE MISSOURI Horticultural Field Day will be held on Friday, July 23, on the horticultural grounds of the Agricultural Experiment Station at Columbia and the Experiment Station Fruit Farm near Turner Station, six miles from Columbia. The meetings and demonstrations will commence at 10 o'clock in the morning at Columbia. The afternoon will be spent in a tour of the fruit farm near Turner Station. Those in attendance are assured the latest information with respect to horticultural problems as developed by the college and experiment station.

A cordial invitation is extended to all interested persons.

Summer Meetings of Horticultural Societies

Delaware.—The Peninsula Horticultural Society (of Delaware) will hold its summer meeting at Berlin, Md., Friday, July 30, at the nursery of J. G. Harrison. Wesley Webb, secretary, Dover, Del.

Georgia.—The Georgia State Horticultural Society will hold a three-day meeting on August 24, 25 and 26 at Cornelia. H. M. McKay, secretary, Athens.

Illinois.—The Illinois State Horticultural Society will hold its summer meeting at the orchard of A. L. McClay at Hillview in Greene county. The exact date is to be announced later. H. N. Day, secretary, Centralia.

Indiana.—The Indiana Horticultural Society will hold its summer meeting in Knox county, near Vincennes, about August 10-12 (definite dates and place to be announced later). Monroe McCown, secretary, Lafayette.

Kentucky.—The Kentucky State Horticultural Society will hold its summer meeting on July 21 in McCracken county. An orchard tour and speaking program is being arranged.

The Henderson county district will hold its annual field meeting at a later date. Ben E. Niles, secretary, Henderson.

Massachusetts.—The Massachusetts Fruit Growers' Association will hold four summer field meetings, as follows:

August 2: Essex county, Ipswich, at the orchard of Dr. Goodale and a visit to the Turner Hill Farm.

August 3: Plymouth-Norfolk-Bristol counties at the orchards of Walter Sampson and T. S. Nelson in Lakeville.

August 5: Middlesex county, Boxboro-Stow-Hudson section.

August 21: Hampshire-Franklin-Hampden counties meeting at Charles Gould's Hillside Orchard in Haydenville.

William R. Cole, secretary, Amherst.

Michigan.—The Michigan State Horticultural Society will make a tour of orchard districts on July 23 and 24 in Manistee, Benzie and Grand Traverse counties. The Chippewa Hotel at Manistee will be the starting point. H. D. Hootman, secretary, East Lansing.

Missouri.—The Missouri State Horticultural Society will hold a Horticultural Field Day at the experiment stations at Columbia and at Turner Station on July 23. Patterson Bain, Jr., secretary, Columbia.

New Jersey.—The New Jersey State Horticultural Society will hold its summer meeting on August 10 at Locust Grove Farm, Westville, owned by Henry W. Leeds. H. H. Albertson, secretary, Burlington.

New York.—The New York State Horticultural Society will hold its summer meeting at the Sodus Fruit Farm, Sodus, on August 18.

The eastern summer meeting of the society will be held at the home of President E. W. Mitchell, Stuyvesant Falls, on August 13. Roy P. McPherson, secretary, LeRoy.

Ohio.—The Ohio State Horticultural Society will hold summer meetings as follows:

Southern Ohio summer meeting at orchards of L. B. Yaple, Chillicothe, August 6.

Northern Ohio summer meeting at orchards of W. T. Mann, Geneva, August 13.

Northern Ohio grape growers' meeting at Vermilion, August 12.

F. H. Beach, secretary, Columbus.

Oklahoma. — The Oklahoma State Horticultural Society will hold its summer meeting on August 14 at the Oklahoma Agricultural and Mechanical College, Stillwater, Okla. Address George W. Cockran, head Department of Horticulture and Forestry, Oklahoma Agricultural and Mechanical College, Stillwater.

Father—You kept the car out rather late last night, son. What delayed you?

Son—Had a blowout, dad.

Father—Huh! Tire or roadhouse?
—Boston Transcript.

A Good Name

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It is a fact well known that the name **DODGE BROTHERS** is more valuable than the vast and expanding works in which Dodge Brothers product is built.

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Profit in Thinning Apples

IF AN apple tree sets more fruit than it can mature well, the orchardist may find it will pay him well to thin; a crop of good size and quality usually pays more profit than one of small and inferior fruit.

"Not all the trees in an orchard may need thinning," points out G. W. Peck of the New York State College of Agriculture, who is responsible for the foregoing statement on the value of thinning. "Where the crop is light and well distributed over the bearing surface, thinning is unnecessary," he continues, "but where the set is heavy, thinning should prove profitable.

"From the experimental evidence at hand, proper thinning will not reduce the number of barrels or bushels which a tree will produce. The number of fruits on an overloaded tree may be reduced 25 or even as much as 50 per cent, depending on the vigor and the load the tree is carrying. Those which are left will ordinarily so increase in size that as many bushels will be matured as there would have been had the tree been unthinned.

"Soon after the June drop, thinning should be started. Heavily loaded trees lacking in vigor should be thinned more than the very vigorous trees. Varieties which naturally produce large fruits should be thinned to a greater distance than the small growing kinds. With apples, the distance between fruits should range from six to nine inches, with pears and peaches from five to seven inches, and with plums three to five inches.

"A pair of small clippers or shears may be used. However, it may be done considerably faster by breaking off the young fruits with the fingers. All deformed and insect or fungous injured fruits should be removed. Only one fruit should be left on a spur, and these thinned to the desired distance."

Night Watchman—Young man, are you going to kiss that girl?

He (straightening up)—No, sir.

Night Watchman—Here, then, hold my lantern.—*Black and Blue.*

SUPREME

The satisfactory performance of any car, truck, tractor or stationary engine is absolutely dependent on its spark plugs—that is why engineers who design the finest cars and engines, both in this country and Europe, have selected Champions as standard equipment and why two out of three operators of cars, tractors or stationary engines, the world over buy Champions regularly.

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Toledo, Ohio

The Editor's Mail Box

Crimson Clover in Peach Orchard

Editor, American Fruit Grower Magazine: For the last three years I have sowed crimson clover in my peach orchard. The first and second times I failed to get a stand. Last fall I got a good stand and now the clover is about 12 inches high and beginning to bloom. Please advise me how to handle this clover in order to get the best results.—P. H. M., Tennessee.

ANSWER: You can handle the crimson clover in your peach orchard in two ways. You can mow the crop, take it off the ground, feed it to your farm animals, and then later return the manure to the land. From a fertility standpoint, this would be the best practice. The animals do not retain much of the fertility, and the manure would contain practically all of the fertility contained in the hay. Of course, you would have to take good care of the manure in order to prevent leaching and drainage in the barn and barnyard. Such manure should be returned to the land in the freshest condition possible, spread immediately and plowed under at the first opportunity. This method of handling will conserve the greatest possible proportion of organic matter and fertility.

However, in a peach orchard you have other things to consider besides the fertility problem alone. Your peach trees probably have a crop on them. In this case, the removal of the hay would expose the soil about the trees to the direct rays of the sun, and evaporation of moisture would in all probability be great. Of course, by cultivating or disking the orchard immediately after the removal of the hay, you could reduce the evaporation of moisture to a considerable extent.

Another factor to consider is the matter of spraying. Possibly you have sprayed once or twice by this time with arsenate of lead. In this case, the crimson clover will no doubt carry more or less spray material, and there would be some danger of poisoning the stock or at least giving them a light dose of poison.

Unless you are in great need of feed, I recommend that you mow the hay at once and apply it as a mulch under the trees. Then cultivate the soil between the rows. You may find it necessary to plow the ground shallow at the start. After that you can use a disk or spring-tooth harrow. Do not let the crimson clover grow any longer. It is now competing with the trees for moisture and soil fertility. The trees need these materials to produce peaches of good size and finish and to develop a good setting of fruit buds for the 1927 crop. The method described will conserve these materials for the trees.

Lime-Sulphur and Bordeaux for Apples

Editor, American Fruit Grower Magazine: I note that many authorities recommend lime-sulphur for early spraying of apples and Bordeaux for later applications. Why do they do this? Could I not use lime-sulphur throughout the season just as successfully? It would simplify my operations considerably if I could do so. Kindly give me your advice. —J. E. R., Indiana.

ANSWER: There are several reasons why both lime-sulphur solution and Bordeaux mixture are recommended by many authorities for apples. Bordeaux mixture is the more effective fungicide of the two, and it is more adhesive than lime-sulphur. However, it tends to russet some varieties of apples badly when applied while the fruits are small. When the apples reach a little size, their skins become more resistant to the action of Bordeaux, and Bordeaux can then be used with comparative safety. Bordeaux can be used in hot weather without causing damage to the fruit or foliage, as a rule. This quality, together with its efficiency and adhesiveness, makes it an excellent spray except for the very early applications.

Lime-sulphur causes no injury while the apples are small and the skins are tender, but it often causes a very serious burning of the fruit and foliage when applied in hot weather.

It is because of these circumstances that the two materials are recommended by many authorities. Generally speaking, the best results in summer spraying of apples are obtained when lime-sulphur is used for the first one or two sprays after the fall of the petals and Bordeaux after this time. By using this combination program, growers can largely avoid the injuries caused by both materials and at the same time secure the best possible control of fungous diseases. This combination schedule is particularly advisable in southern apple growing sections in which apple blotch is prevalent.

Cracking of Bark of Young Apple Trees

Editor, American Fruit Grower Magazine: The bark of my young apple trees is cracking just above the crown. The trunks look as though they have been split with a knife in two or three places, and the bark appears to be dying where it is split. Will you kindly advise me as to the cause of this and how to handle the problem.—W. T. W., Illinois.

ANSWER: I think your trees must be suffering from winter injury. Trees which are damaged in the winter often crack in the way you describe. The cracks commonly are more frequent near the base of the tree than in other places, because of the unequal stresses in the trunk near the base.

About the only thing you can do is to clean out the wounds and disinfect and paint them. For a disinfectant, I suggest that you use bichloride of mercury and cyanide of mercury. Dissolve a tablet of each in a pint of water, avoiding metal receptacles. Then pour the two solutions together and store in a glass jar. Paint the wounds with the solution, using a swab or brush.

Following the painting, it is a good thing to dress such wounds with white lead paint. Grafting wax serves nicely in filling cracks.

Quite often winter damaged trees show reduced vigor. In this case it is a good thing to give them an application of nitrate of soda in the spring in order to stimulate active growth. If the trees have been materially weakened, it is a good thing to thin out the tops somewhat so as to reduce the evaporation surface.

Control of Bindweed

Editor, American Fruit Grower Magazine: I have seen so many good suggestions in your department that I want to ask your advice as to the best method of killing a weed in a tract of ground I purchased this spring. Some people call it morning glory. It is a vining plant and it now covers about one-fifth of the ground and occurs in 10 or 12 different patches. Your advice will be much appreciated.—A. D. G., Indiana.

ANSWER: It is probably bindweed that is causing your trouble. Your description is somewhat indefinite but it meets the behavior of this weed more than any I can think of. Some people call it morning glory, and others call it sweet potato vine.

Bindweed is a very difficult weed to destroy. The roots penetrate the soil deeply and they send up shoots at intervals. When a patch of bindweed is plowed up, each of the severed roots is able to take root again. Furthermore, the weed clings to harrows, plows and other tools quite readily and is in this way distributed to uninfested areas.

If the weed is confined to comparatively small patches, the best thing to do is to dig the weeds out with spade and fork, rake the soil and collect every piece of root. Burn the roots to make sure that they are destroyed.

If the patches are large, it will be impossible to use the above method. In that case, you can use either of two methods. First, you can bare fallow the ground for an entire season and in this way destroy most of the weeds. If you have a dry season you can destroy all of them, perhaps. However, you will have to keep the ground plowed and worked so frequently and so thoroughly that not a single bit of green stem or leaf will be able to develop. The moment that you see the shoots appearing, you should work the soil again; in fact, you should aim to do it before the shoots appear. By this means, you will gradually wear out the weed and cause its death. No plant can live long under treatment of this kind. Considerable food is stored in the fleshy roots, and this is used by the stems until they develop green tops, after which they are able to manufacture more food. If you can prevent the plants from developing green tops, then you will soon exhaust the supply of stored food in the fleshy roots and the weed will die.

If you do not wish to bare fallow the ground, you can plant it to some cultivated crop, keeping this so thoroughly cultivated that the weed will be unable to develop a top. Cabbage is a good crop to plant for this purpose. Its spreading leaves prevent the weeds from growing in the row, and you can control the weeds fairly well between the rows with surface cultivators.

If you do not wish to use the bare fallow or the clean cultivation method, then you can plant some crop that will smother out the weeds. Alfalfa is said to be good for this purpose. Sudan grass or sorghum will also give fair results. However, this method can hardly be depended upon to completely destroy the weeds. They will, as a rule, be simply reduced in number and weakened. Usually there are enough roots left to reinfest the patch as soon as the smother crop is plowed up.

I think you could probably destroy the weed by applying large amounts of common salt or iron sulphate, but this would also render the soil unfit for growing other crops.

Agrees With Our Editorial

American Fruit Grower Magazine: In looking over the March issue of the American Fruit Grower Magazine I was very much impressed with your editorial entitled, "Status Fixing Legislation." I think it is a very sane and courageous article.

From times immemorial there has been a great sound about the danger of class legislation. If a New England woolen manufacturer cannot keep his mill going in the face of competition, he cries for protection, but if the Texas rancher meets strong competition, he simply has to take the loss, and there is no economic equity in such a procedure. There is going to be very little opportunity for tariff to protect the American farmer except in the case of dairy products, lemons, sugar and a few of the other agricultural products, which do not altogether make up a major part of our farm income. I believe that if we had more courageous editors like you who would state the basic factors, such as repealing some of the class legislation already on the statute books, disregarding what section and people it may hit, we could soon create a public opinion that could think honestly and logically. The daily press goes up in a howl when we mention farm subsidy, but for the government to subsidize industry and railroads is quite different. Practically all the laws made during the past quarter of a century have been against the farmer, not intentionally so, but because they favor other groups at the expense of agricultural people.

Let us have some more editorials along this line. I am sure that they are going to appeal to your subbscribers, and others who may read them will silently agree with their fairness—*J. L. Baskin, Field Horticulturist, Tennessee State Horticultural Society, Inc.*

Lime Not Good for Strawberries

Editor, AMERICAN FRUIT GROWER MAGAZINE: I want to start a large strawberry patch next spring and I want to get the ground in good condition this year. I suppose it would be well to apply a good coating of limestone since most of our soils are quite acid. How much would you recommend?—D. E. L., Missouri.

ANSWER: Investigations in a number of places have indicated that lime is not good for strawberries. This fruit seems to do best in a soil that has a slightly acid reaction. The lime seems to damage the roots.

Experts of the United States Department of Agriculture state that lime may sometimes be advisable for strawberries in small quantities for purposes of improving the physical condition of the soil and for getting legumes to grow successfully. In such cases the lime should be applied in small quantities considerably in advance of the time the strawberries are set.

Inspection Certificate for Raspberries and Other Nursery Plants

Editor, AMERICAN FRUIT GROWER MAGAZINE: I want to sell some black raspberry plants next spring and I understand that I must secure a certificate before I can ship them. If this is true, when must the certificate be obtained and from whom? Would appreciate your advice.—R. A. C., Illinois.

ANSWER: In practically every state, growers must secure a certificate showing that nursery plants and shrubs are practically free from serious pests and diseases before the same can be sold or shipped. In many states the work is in charge of the state department of agriculture and growers desiring certificates should apply to the department of their state for an inspection. It is a good thing to make application early during the previous growing season, for most of the inspectors desire to make the inspections at that time.

In Illinois the inspection work is in charge of P. A. Glenn, chief nursery inspector, Urbana, Ill. I suggest that you write him.

Your plants will stand a better chance of passing inspection if you have sprayed and cultivated them this spring. As soon as the crop has ripened, I suggest that you cut the old canes off close to the ground and remove and burn them. These canes will die anyway after bearing their crop, and since they are usually more or less diseased, they will serve as sources of infection of the new growth if allowed to remain. Also cultivate the patch thoroughly in order to promote a vigorous growth. In addition, spray the plants occasionally with Bordeaux mixture and cultivate frequently. When the tips of the canes begin to touch the ground in the early fall use a dibber or trowel to open the holes and insert each tip about three inches deep and at a slight angle. This method will give you the best shaped plants for selling. You will find it advisable to go over your patch three or four times to bury the tips, since they reach the proper condition at different times.

What Spray Material Combinations Are Practicable?

Editor, AMERICAN FRUIT GROWER MAGAZINE: I hear a great deal about mixing different kinds of spray materials together. I understand that some go well together and others do not. I should greatly appreciate if you would give me reliable information on this subject so that I will not make costly mistakes.—W. E. K., Pennsylvania.

ANSWER: According to F. C. Cook and N. E. McIndoo of the United States Department of Agriculture, who have thoroughly investigated this subject, the following materials can be mixed together with safety: lime-sulphur and calcium arsenate; nicotine sulphate and lead arsenate; and Bordeaux mixture with calcium arsenate, acid lead arsenate, zinc arsenite or Paris green.

The following combinations cannot be made with safety: soap solution with either calcium arsenate or acid lead arsenate; kerosene emulsion with either calcium arsenate or acid lead arsenate; and lime-sulphur with acid lead arsenate. When combined with nicotine sulphate, calcium arsenate produces free nicotine, and unless a decided excess of free lime is present, soluble arsenic is produced. The combination of sodium arsenate with Bordeaux mixture produced no soluble arsenic in the experiments conducted.

The investigations of Cook and McIndoo show that the chemical analysis of an arsenical is not a sufficient guide in itself to its insecticidal properties. Furthermore, a study of the toxicity alone will not show whether or not an arsenical is suitable for general insecticidal purposes. Both a chemical analysis and a thorough study of toxicity are required to show whether or not an arsenical is a satisfactory insecticide.

Good Whitewash Formula

Editor, AMERICAN FRUIT GROWER MAGAZINE: Please give me a formula for a good whitewash to use in my poultry house.—J. A. R., New Jersey.

ANSWER: Your own College of Agriculture has recently announced the development of a new whitewash that is fully as effective as the old-fashioned whitewash, and which at the same time is more durable. It may be used satisfactorily both inside and outside.

To make this new whitewash, slack one bushel (62 pounds) of fresh stone lime in 12 gallons of hot water. Then make another solution of the following: one pound of sulphate of zinc, one pound of alum, and two pounds of common salt, dissolved in two gallons of boiling water. The two solutions are then mixed together, and two gallons of skimmed milk are added. Keep the mixture thoroughly stirred while applying it.

Whitewash made by this method is as good a germicide and insecticide as the old preparation, and when dry it will be harder, of a glossier finish, and much more waterproof than the old preparation.

EDITOR, AMERICAN FRUIT GROWER MAGAZINE: I have been reading your valuable magazine for nearly 15 years and have almost a complete file for reference. My subscription has apparently run out, as I have not received the magazine during the last two months. Kindly look the matter up and continue my subscription where it left off, sending me the copies I have missed. I feel lost without the AMERICAN FRUIT GROWER MAGAZINE. Be sure to send me the numbers I have missed even if the cost is $5. I must have them as I am actively engaged in orchard work. —*Robert B. Haines, Pennsylvania.*

A Long, Low, Fast International Truck —Ideal *for* Fruit *and* General Hauling!

THIS International model is attracting the attention of fruit growers and general farmers everywhere. In consequence many growers have added one or more of them to their equipment.

The 1½-ton chassis has a wheelbase of 150 inches, giving ample room for loads of fruit and produce without the necessity of high lifting. The top of the frame is only 24 inches from the road, which assures a low center of gravity and unusual safety at all speeds. The "S L" is built for economical hauling over long distances or short.

As shown in the picture above, the "S L" carries its capacity load well. Space is provided for the display of your name or trade mark. This display, combined with the good appearance of the truck, gives your orchard, grove, or farm real advertising every time your truck travels the highways. "S L" is a truck any man can be proud to call his own.

Other popular International Truck models are the regular Speed Truck of 1-ton capacity; the short wheelbase "S D" of 1½-ton capacity for semi-trailer use; and a complete line of Heavy-Duty Trucks ranging from 1½-ton to 5-ton maximum capacities. Bodies for every hauling requirement. Ask for complete information.

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INTERNATIONAL HARVESTER COMPANY TRUCKS

Orchard Wagons and Trucks

By F. C. Sears
Massachusetts Agricultural College

THERE are some fairly definite essentials for a really good vehicle for moving fruit from the orchard or other plantation to the packing house.

The first requisite is a good set of springs, and this may be regarded as practically indispensable, for even the firmest and toughest fruit will be injured if it is hauled very far on a "dead ax." And our best fruit growers are coming to lay more and more stress upon careful handling if fruit is to arrive on the market in the best condition; or if it is to hold its best flavor and texture in storage. The springs must, of course, be strong, but they should also be pretty flexible, as too stiff a spring is certain to injure the fruit in hauling over the conditions one is likely to find in most orchards.

A good orchard wagon on good springs. It will carry a good load and can be turned in a small area

Perhaps the requisite of second importance is the ability to turn short in order to turn around in the orchard among the trees. The importance of this will vary somewhat with the distance between the trees in the orchard, but it is always very desirable. To be most satisfactory in this respect, it should be possible to at least turn the team and tongue of the wagon at right angles to the line of the bed.

Another matter of importance is a low-hung body. A low-hung body saves a lot of lifting of heavy packages. Even a few inches makes a difference if the packages are heavy, like a barrel of apples. In a sense, the last two points are incompatible, since it is usually necessary to have the front wheels turn under the bed if the wagon is to turn short. A type of orchard wagon in use in parts of Canada obviates this difficulty and secures both short turning and a low bed by having the front wheels far enough in advance of the bed so that they turn without touching it. This makes a somewhat awkward vehicle to look at, but is very effective in getting fruit out of the orchard.

Two other points which are desirable, though not so important as those already mentioned, are to have good capacity and to have the sides removable.

Where a particular container is used as an orchard package, such as a bushel box, or a barrel, or some special type of basket, it is very desirable that the platform or bed of the wagon or truck be made of such a width and length as to carry a certain number of these packages in each tier or row.

A wagon which the writer recently had made for his department at the Massachusetts Agricultural College, and which is shown in the illustration herewith, to a large extent meets all of the requirements mentioned above. It has a good solid platform 58 by 120 inches, capable of carrying 18 of our orchard boxes in one layer. The sides are removable, and there is a heavy strip along each side of the platform to prevent boxes from sliding off when the sideboards are not in place.

The one criticism which might possibly be made of it is its height, but this is as low as is consistent with a front wheel of reasonable height that will turn under the bed. And with the bushel box which we use as an orchard package, our men do not find the loading of the wagon at all difficult.

Wind Direction Forecasts by Radio

FOLLOWING a suggestion made by J. C. B. Heaton and Sons, orchardists at New Burnside, Ill., the United States Weather Bureau offices at Chicago and St. Louis are co-operating in giving wind direction forecasts for the benefit of southern Illinois fruit growers. The forecasts are made by the officials at the Chicago office and are then transmitted to St. Louis by telegraph. Any St. Louis radio broadcasting station can obtain this information by telephone from the St. Louis Weather Bureau office. At the present time Station KSD, with a wave length of 545.1 meters, is broadcasting this wind direction service as part of the regular weather report.

Such information as this will no doubt prove of great value to fruit growers in planning their spraying operations. The weather bureau can without question perform a valuable service by broadcasting such information from as many points in the United States as possible, especially in sections of the country where fruit is grown on a commercial basis.

FOR BEST results timothy hay should be cut when in full bloom. Clover should be cut when it has reached full bloom. If allowed to stand too long, many clover leaves will turn brown and fall and the stems will become woody. Such hay has less feeding and market value than hay cut at the proper time.

Mixtures of clover and timothy are best cut when the clover has reached full bloom. Red clover is usually ready to cut 10 days to two weeks before timothy.

Alfalfa should be cut when 10 to 25 per cent of the crop is in bloom. Alfalfa that is putting forth new shoots from the crown should be cut without regard to bloom.

A report of the Bureau of Commerce shows that 31,141 farm lighting plants were manufactured in the United States in 1923 and 23,316 in 1924.

Protect Peaches From Rot

By H. W. Anderson
University of Illinois

ONLY first class peaches will find a market this season if the crop now in prospect matures. For this reason growers should make a special effort to keep their fruit free from blemishes and rots. Buyers will steer clear of orchards where there is any evidence of brown rot. Careful grading will exclude rotting fruit, but the spores of the brown rot fungus will be present, and unless the fruit is carefully handled rotten peaches will appear by the time it reaches the market. Buyers will not hesitate to reject such fruit because they will have plenty from which to choose.

Some of the ways in which the peach grower can reduce the chances of loss this year are: (1) careful spraying according to the regular schedule, and (2) applying an additional spray a few days before the peaches are ready to harvest. This spray should not contain lead arsenate and it should be of such a nature as not to show on the fruit. Dry-mix and self-boiled lime-sulphur mixtures will disfigure the fruit if used for this spray. Dritomic or sulficide are better. Using spray rods instead of guns and securing a mist spray also will aid in keeping the spray from showing on the fruit. Dusting at this time would be satisfactory, but the dust should not be blown directly into the trees and should be applied lightly. Again, lead should not be used in the dust, just pure dusting sulphur. The purpose of this late spraying is not so much to protect the fruit while still on the trees, but rather to keep it from rotting while being handled before it is put in the refrigerator cars.

The third way of reducing chances of rot and, in many respects, the most important way, is to handle the fruit in the most careful manner from the time picking starts until the baskets are in the cars or on the local market. Brown rot will not attack uninjured fruit, but many peaches in each bushel are usually scratched or bruised by careless handling. Picking baskets should be padded, pickers should be trained to handle the fruit carefully, overripe fruit should be sorted out, packing tables or graders should be carefully constructed and padded, baskets should be of good construction, and only sound baskets should be packed. But above all, care should be taken to keep all overripe and crushed fruit cleaned up and hauled away from near the packing shed.

If brown rot or any other rot has been observed in the orchard previous to starting picking, a special inspection should be made while the fruit is still on the trees, and all rotting or cracked fruit should be picked in special baskets and taken from the orchard. The baskets should then be burned or thoroughly disinfected.

Where the fruit is to be shipped in refrigerator cars, the cars should be on the track and cooled before the peaches are hauled to the loading station. Every effort should be made to get the fruit cooled as soon as possible after it is packed. Brown rot as well as Rhizopus rot—the two most important peach rots—develop very slowly at low temperatures, and new infections will not take place as long as the fruit is kept near 40 degrees.

These sanitary methods might well make the difference between a big profit on the peach crop and a decided loss. No grower, therefore, can afford to neglect these precautions.

A Cheap Labor Saving Device

By C. L. Burkholder
Purdue Experiment Station

MOST commercial fruit growers use some form of a disk for the early cultivation of their orchards. The old system of plowing the orchard has been largely abandoned. This has been made possible partly through the use of cover crops, such as millet and oats, which make a good fall growth and winter ground cover but do not live through the winter. The double disk can be depended upon under such conditions to put the soil in good condition without plowing, even when a cover crop, such as rye, is used, provided the work is started before the rye starts to get woody.

Extension Spring-Tooth Harrows

After the orchard has been cut over several times with the disk, there is no need for further deep cultivation. A tool which will break the crust, prevent weed growth and provide a dust mulch two inches deep is all that is necessary. Deep cultivation actually results in a loss of moisture as compared with shallow cultivation. Here, then, is the ideal place for a tool such as a spring-tooth harrow. If the weeds get a little start. It can be set so as to thoroughly break up the soil to a depth of three inches. An excellent type of spring-tooth harrow for orchard use is one having two wheels at the back of each gang. The usual difficulty, however, is to get up close enough to the tree rows. This can be overcome by having a steel frame made at the blacksmith shop of sufficient width to extend well up to the bodies of the trees. This frame is attached to the sides of each gang of the harrow by four bolts, so that it can be easily removed and the harrow brought back to the normal position to take care of the centers of the rows. The harrow in the illustration was picked up at a sale for $5, and the extension frame cost $2.25, thus making a very cheap as well as effective orchard tool.

A spring-tooth harrow equipped with steel frame as described

Fruit Growing in Southeast

By O. F. E. Winberg

Spraying the Satsuma Orange Orchard

SPRAYING for sour scab and red spider has been quite thorough this season; in fact, the control has been better this year than in any previous year.

Red spider cannot be controlled with one spray. Satsuma orange trees should be watched very closely during the season, and whenever there is evidence of red spider being present lime-sulphur (one gallon to 70 gallons of water) should be applied immediately.

From now on the orchardist should be on the lookout for rust mite, because if he has controlled scab, red spider and scale, and then fails to control rust mite, he has gained nothing, but rather he has wasted his money. Bear in mind this fact: The trade makes a discrimination against russeted fruit to the extent of 75 cents a half strap. Now, if an orchardist has 200 boxes of Satsumas and 50 per cent of them contain russeted fruit, the loss is $75.

Whenever rust mite is present in the orchard, do not wait until next week or next month to spray, but spray immediately with lime-sulphur solution registering 32 degrees Baume, one gallon to 70 gallons of water.

The Satsuma orange crop is not safe from rust mite injury until harvest time. We have seen orchards free from the rust mite three weeks before harvest, in which by harvest time 50 per cent of the fruit was russeted.

Cover Crops for Satsuma Orange Orchards

AS PREVIOUSLY stated in this department, clean cultivation should be practiced in the Satsuma orange orchard until the latter part of July, when cover crops should be planted.

It is important that clean cultivation be continued as long as possible. Therefore, such legumes should be selected for cover crops as can be planted between July 20 and August 1. One of these legume crops that has a comparatively short growing season is the Laredo soybean.

Plant in drills 20 inches apart and quite thick in the row. Fertilize at the time of planting at the rate of 300 pounds per acre, with fertilizer analyzing 10 per cent phosphoric acid, two per cent ammonia and two per cent potash, the ammonia being derived from tankage or cottonseed meal and the potash from kainit. The seed should be planted shallow, about one-half to three-fourths inch deep. Cultivate about three times so as to assist the plants in establishing themselves and to prevent the weeds from getting any advantage.

At the time when the legumes are planted, the orchard should be in a perfect state of cultivation, absolutely free from weeds.

If Laredo soybeans cannot be had, then plant cowpeas, preferably of the Iron or Brabham variety. Plant in the same way and use the same amount of fertilizer as indicated for the soybeans.

While the seed may be harvested in the fall, the vines should be plowed under in order to increase the amount of humus in the soil.

In an orchard of young trees that have not come into bearing, leave a strip on each side of the tree rows for cultivation and continue to cultivate there and keep the strips clean until about September 1.

Harry—I hear the captain has had hard luck. His wife has run away from him.

George—Yes, he took her for a mate, but she proved a skipper!—*Selected.*

Good Value at a Low Price

If you are looking for a low priced tire of good value buy the Premier.

Premier tires are part of the Fisk line. They are made by The Fisk Rubber Company and sold by Fisk Franchise dealers.

Premier tires bear the Standard Warranty — look good and wear well.

Publications of Interest to Fruit Growers

THE FOLLOWING are some of the publications of interest to fruit growers that were received during the past month. Distribution of some of these may be limited to the state in which published, but we believe that in most cases growers can secure copies free of charge by addressing a request to the institute publishing them.

Jellies, Jams and Marmalades, by Lucille Brewer and Marion Evans Dakin. Bulletin 97, Connecticut Agricultural College Extension Service, Storrs, Conn.

Large Peach Crop Calls for Organized Marketing, by J. W. Lloyd. Circular 307, Agricultural Experiment Station, Urbana, Ill.

Certain Physical and Chemical Changes of Grimes Apples During Ripening and Storage Period, by H. H. Plagge, T. J. Maney and Fisk Gerhardt. Research Bulletin 91, Agricultural Experiment Station, Ames, Iowa.

Apple Spraying and Dusting Experiments, 1918 to 1924, by W. J. Morse and Donald Folsom. Bulletin 325, Agricultural Experiment Station, Orono, Maine.

Ohio Commercial Orchards and Vineyards, by C. J. West. Special Bulletin, Department of Agriculture, Columbus, Ohio.

Effects on Honeybees of Spraying Fruit Trees with Arsenicals, by N. E. McIndoo and G. S. Demuth. Department Bulletin 1364, United States Department of Agriculture, Washington, D. C.

Summer Meeting of Michigan Horticultural Society

THE ORCHARD tour of the Michigan State Horticultural Society will be held July 23 and 24, 1926. This tour, which will be held in Manistee, Benzie and Grand Traverse counties, will be of particular interest to cherry and apple growers. The Chippewa Hotel at Manistee will be the gathering place previous to the start.

The first day will be spent in visiting the red raspberry section near Onekama and several large apple and cherry orchards in the vicinity of Bear Lake and Beulah. On the second day an opportunity will be afforded to see the Grand Traverse Packing Company, at Traverse City, which will be canning cherries at this time. The caravan will then take off for the Old Mission peninsula to visit this concentrated fruit section which is noted for the quality of its cherries. From Golden Tower 250,000 fruit trees can be seen. This tour is sure to be of exceptional interest even to those but mildly interested in commercial fruit growing, because of the scenic beauty that is found in this part of Michigan.

A. F. YAEGER, secretary of the North Dakota State Horticultural Society, states that the Poorman gooseberry, which is recommended by the New York Agricultural Experiment Station as the best variety for New York, is not hardy in North Dakota. The variety has frozen in the ground three years in succession. Under the same conditions, a number of the North Dakota hybrids have passed through the winter without damage.

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This highly improved contact spray "breaks" as it passes thru the nozzles, and quickly forms a uniform oily film on leaves and fruit, which kills the young worms, prevents "stings," and acts over an extended period as a repellent in preventing the moths from laying eggs on the sprayed surface. VOLCK is also highly effective against San Jose Scale and many other insect pests, controlling them all in the same application. Moreover, it may be applied in mid-summer without injury to fruit or foliage.

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Ask your dealer for *Niagara* PARA. It is *pure*, unadulterated Para Dichloro Benzene. *Niagara* PARA enables you to rid your trees of Aphis, easily and safely. Complete directions come with every package.

The U. S. Dept. of Agriculture and State Experiment Stations endorse Para Dichloro Benzene for controlling peach and prune borers. You obtain effective control of Aphis, as well as tree borers and grape phylloxera by the use of *Niagara* PARA, strong, unadulterated Para Dichloro Benzene.

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Please write for FREE PARA booklet, and we will include a copy of the latest Government Bulletin on the control of these pests. Kindly give dealer's name.

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**Unless this Chemical is absolutely unadulterated it is ineffective. The Niagara Para label insures the highest purity.*

Markets and Marketing

THE NEW Chicago produce market, which has been in operation since last September, is working out very satisfactorily. The writer made a visit to the market recently to learn what the produce dealers themselves think about the market.

W. L. Wagner, one of the leaders in the movement which put this market into existence, states that the new market is even exceeding expectations. He would not want to return to the conditions prevailing on old South Water Street under any circumstances. Because of the congestion existing on South Water Street, buyers often wasted an hour or two in getting into the market and as much to get out. Furthermore, there were many delays and losses due to the proximity of the market to the "loop" district of Chicago. In the new market there is no congestion. The alleys are 48 feet wide—as wide as the street was in the old South Water Street market and that this enabled him to ket are 90 feet wide from curb to curb. In the streets there is room for parking two rows of cars lengthwise in the middle of the street, for an open driveway on each side of these two rows of cars, and for a row of wagons or trucks backed to the sidewalk on each side of the street. Thus, buyers can get in and out at will with their wagons and trucks. As one views the street in the new market at a busy time of the day, he is forcibly impressed with the smoothness of operation as compared with the conditions prevailing on South Water Street.

Mr. Wagner and others told me that the buyers seem to be in a better frame of mind in the new market, and in the opinion of many dealers, this results in larger purchases on their part. One buyer with whom I talked stated that he could make his purchases much more quickly at the new market and that this enabled him to spend a larger proportion of his time in promoting sales at his grocery store on the south side of Chicago. Such a state of affairs, repeated over and over, undoubtedly plays quite a part in promoting increased consumption of perishables, a matter which is of great importance to both growers and dealers.

The general feeling of the produce dealers is that the new market is lowering costs of operation. A. H. Welch, president of the South Water Market Trust, said that the cost of cartage has been reduced 25 per cent and that the overhead expense has been reduced 30 per cent. An important factor in operating costs is the financing system. Under the system in effect, the dealers will complete their payments in 16 years and they will then own their own stores, whereas on South Water Street the net rentals were about twice as high as are being paid on the new market and the dealers would never have come into possession of their stores. The facilities in the two places cannot be compared as to efficiency and convenience.

Several of the produce dealers informed me that trade had increased in the new market. When the market was under consideration, it was feared that the buyers might go elsewhere for their needs, but this fear has been entirely dispelled. The new market seems to be drawing more and more trade steadily.

Some important new developments are taking place with reference to terminals and auction markets. The railroads are jointly constructing a new concentration terminal within five to 10 minutes' haul of the market. This terminal will have no team tracks. It will be used for inspection, for re-icing and for diverting the cars. It will accommodate about 1800 cars of products.

Adjoining the railroad terminal will be another terminal which will be owned by the produce dealers. It will be used solely for products which are to be unloaded in Chicago. There will be team tracks 40 feet wide between each pair of switching tracks.

On a site adjoining these two terminals there is a large auction house which is now in operation. It houses the operations of the two Chicago auction companies. The display room accommodates 180 cars of products at one time.

When the new concentration terminal is completed by the railroads, all cars consigned to dealers on the new market will be delivered to it. This should prove a distinct advantage to some of the railroads and to shippers on such railroads. In the past some of the railroad terminals in Chicago have been better located than others and for this reason produce has sold better in them. The new terminal will place all railroads, and growers on all railroads, in an equal position in this regard and should prove advantageous all around.

The new terminals should prove of great value to buyers from nearby markets who assemble cars of mixed products in Chicago and ship them to their market. Under the former conditions, a lot of time was required to visit the different railroad yards and assemble the various purchases in one place. In the new terminals, such cars of products can be assembled quickly, with less expense, and with less damage to the products.

In addition to the advantages already mentioned, one must consider also the canopies over the sidewalks, the larger and better arranged stores and offices, the fireproof construction, the greater freedom from rats and vermin due to concrete and steel materials, the central cold storage facilities, and the central incineration plant. Many dealers have constructed special cold storage rooms in their basements and are obtaining refrigeration from the central plant through insulated pipes.

Only one condition has developed in the new market which is not proving out with entire satisfaction. The new market has two streets running through it. One of these streets is attracting more trade than the other. However, this has been due in part at least to the fact that the one street was not fully occupied at the start by dealers. The space is being taken up gradually by incoming dealers, and the trade is said to be improving. At the same time, some dealers are wondering if it might not have been better had they constructed the entire market along one street.

THE C. & E. I. RAILROAD will run a special train from Terre Haute to Evansville, Ind., between June 28 and July 3 with the object of promoting improved methods of grading, packing and loading of fruits and vegetables. A large crop of fruits and vegetables is expected in the territory this season, and the railroad officials are conducting this tour in the nature of an educational campaign with the object of assisting growers and themselves in handling the crops to the best advantage. Stops will be made at a number of important shipping points at which the exhibits may

be examined by interested growers. Moving pictures and lectures on fruits and vegetables will also be presented in a car especially equipped for this purpose.

IT IS becoming quite common for dealers and large co-operative associations to preserve cherries and various small fruits in the fresh condition by freezing the product solid and keeping it below the freezing point. The product is delivered to bakers and other consumers in the frozen condition, following which the berries are thawed out and used immediately. The principal use of such fruit is for pies. It is also quite common for such fruit, particularly strawberries, to be kept over until just before the crop of the next season ripens, when it is used to satisfy the demand of the season.

DATA relative to the division of the consumer's dollar when paid for oranges and lemons, have been compiled by the California Fruit Growers' Exchange, Los Angeles, for the 12 years 1913-25. Prices paid by consumers have been collected through the district sales managers of the exchange in 45 representative cities. Wholesale and carlot prices, on the same brands for which retail prices were secured, were noted and the products traced back to the producers.

The following table has been prepared from material recentiy published by the exchange:

	1913–23, Ten–year average	1919–24, Five–year average	1923–24, One year	1924–25, One year
Paid by consumer	$6.90	$7.93	$6.82	$8.81
Percentage	100	100	100	100
	Percentage distribution of consumer's dollar			
Retailer	26.2	26.7	29.0	25.4
Jobber	8.3	8.1	8.1	7.5
Transportation	17.1	18.2	19.6	15.1
Selling[1]	1.1	1.4	1.6	1.4
Picking, hauling, packing	8.8	10.2	11.3	8.8
Fruit on tree	38.5	35.3	30.4	41.8

[1]Including advertising.

It will be noted by the figures that the percentages of the consumer's dollar retained by the retailer, the jobber and the transportation companies show a tendency to vary inversely with the selling price.

In commenting on the data, the management of the exchange says: "A more standardized product and increased consumption due to Sunkist advertising have done much to make the citrus business a desirable one for the trade. Lower transportation rates and increased efficiency in production, harvesting and packing, as a means by which growers' returns may be increased, are receiving constant attention."

THE NEW ZEALAND apple crop was very large during the season just closing and the quantity available for exportation to Great Britain and South America is estimated at about 500,000 cases compared with only about 250,000 last year, according to a report received from Assistant Trade Commissioner John C. Speaks at London. The New Zealand cold storages are congested, and shipping facilities, although more extensive than prevailed last season, are said to be unable to handle the supply of fruit for export.

REFRIGERATOR cars with bunkers of the divided wire-basket type cool the load as efficiently as those equipped with the United States standard wire-basket bunkers, and do so with less ice, according to Department Bulletin 1398-D, "Comparative Efficiency of Divided Wire-Basket Bunkers in Refrigerator Cars," just issued by the United States Department of Agriculture.

In order to determine the efficiency of this new type of bunker, two tests were made, using two cars in each. One car was equipped with the United States standard wire-basket bunker and the other with the divided wire-basket bunker. Apples were used in the first test and oranges in the second.

The car having the divided wire-basket bunker maintained temperatures equal to those kept up by a car of exactly the same construction except that the latter was equipped with a United States standard wire-basket bunker of larger ice capacity.

In the first test, the car having the divided wire-basket bunker required 4060 pounds less ice than the other car and in the second test 3634 pounds less. This saving in ice was a result of the increased meltage surface provided by the new type of bunker and because of its smaller ice capacity.

The bulletin contains numerous details relative to the tests and results obtained. A copy of the new publication may be had free, as long as the supply lasts, by writing to the United States Department of Agriculture, Washington, D. C.

A RECENT summary of the Florida citrus industry made by C. C. Commander, general manager of the Florida Citrus Exchange, shows that the investment in Florida citrus property approximates $231,000,000. An area of 288,656 acres, or about 500 square miles, is planted to citrus fruits in Florida. This acreage, however, is only about five per cent of the estimated 6,000,000 acres in the state which are adapted to citrus culture. At the present time only 176,000 citrus trees are in bearing. The value of citrus groves is estimated at not less than $800 per acre. There are about 250 packing houses in the state representing a total value of about $6,000,000. In considering the capitalization of the industry, one should also include the values of such supplementary lines of business as supply fertilizer, spray materials, grove equipment, packing house machinery and other supplies. The figures collected by Mr. Commander show that without question the citrus industry is the backbone of Florida prosperity.

THE OKANOGAN Apple Growers' Union of Okanogan, Wash., has installed several plants which are intended to remove the spray residue from apples of the 1926 crop. The labels used on the boxes will indicate that the apples have been wiped, and it is expected that such fruit will command a premium over fruits not so treated.

The machines will be placed just ahead of the grading machines. Five of them will be used, each costing approximately $500. The fruit will be conveyed over horizontal revolving rollers and will be slapped by 500 pieces of canvas. The machines will be electrically driven and a fan will remove dust and other materials.

Monthly Market Review

THE FOLLOWING summary of the fruit marketing situation was furnished by the United States Bureau of Agricultural Economics on June 8:

"Shipments of fruits and vegetables have been catching up in quantity. About eight per cent more cars of leading products were shipped this May than during the same month last year, and the gain was in the last two weeks of the month. The result of the increasing supply is a downward slant of prices for most lines. Lateness of June appears chiefly in the small beginning of shipments of such products as peaches, melons and the tender truck crops. Cool weather in spring and early summer favors good clearance of the potato and apple holdings. Movement of both of these products continued fairly active unusually late in the season. Most of the recent apple shipments were from Washington and New York.

"Many fruits and vegetables sold lower. There were few important price advances. Cantaloupes and watermelons fell away rapidly from high opening prices. Peaches have been moving from Georgia at increasing rate, and a heavy season is expected. The same is true of Florida and Georgia watermelons. Drought was relieved by timely rains in May and June, saving the situation for numerous truck crops.

Strawberries Doing Well

"The strawberry deal turned out more profitably than last season. Rain came at the right time to save the crop for several important shipping regions and improved the size of the fruit in later shipments. Louisiana shipped twice as many berries as last season, turning out a crop worth some $5,000,000. Crops of the region from North Carolina west to Missouri were cut down somewhat by dry weather. Virginia, Maryland, Delaware and New Jersey have good crops in most sections and favorable markets. Prices in June were a little lower than a year ago when receipts were greatly lessened by drought. The outlook appears favorable for New York, Michigan and other northern berry shipping sections. Juice factories have been taking a large share of the crop in some parts of Virginia this season. Packing the fruit for shipment in barrels is becoming an important feature of the trade. Heavy planting of raspberries is reported in Michigan.

Early Peach Crop

"Estimates of the Georgia peach crop indicate possibly 14,000 carloads available for shipment. The peach crop in northern and central California seems to be very promising, with a large pack expected by canneries and a great output of the dried product. Many of the carlot shipments reported in that state are to factories. All California canned fruits must meet the requirements of the state's new standardization law. The North Carolina peach crop will soon be under way, with probably about as many carloads as last season. Texas and middle western fruit sections also add heavily to the summer supply. The Georgia peach crop last year was valued at $10,000,000 and that of California at $15,000,000."

Walter found his mamma talking to a very stout woman.

"Walter," said his mother, "this is your great-aunt."

"Yes," said Walter, gazing at her ample proportions, "she looks it!"—*Exchange.*

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The farmer's long working day is shortened by the Speed Wagon's rapid travel.
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REO MOTOR CAR COMPANY
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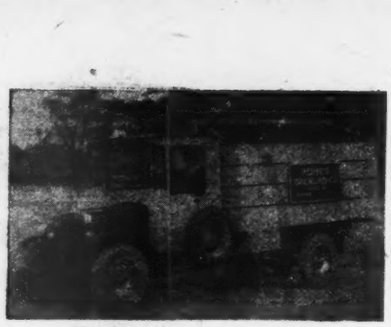

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Nearly every reader of this publication has something to sell which other fruit growers need. Here is the place to make that fact known. Many subscribers are already making profitable use of this department. List what you have for sale or need and find a ready market.

Classified advertisements in The American Fruit Grower Magazine, using no illustrations or display type, cost 15 cents a word each insertion, no advertisement of less than ten (10) words accepted, making the minimum charge $1.50. Cash must accompany order, copy must reach us by the 10th of the month for following month's issue. Address

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AMERICAN SHEET AND TIN PLATE COMPANY, Pittsburgh, Pa.

THERE is no way for a co-operative to secure a high price for a poor product. Associations which are formed with the hope of doing this are doomed to failure, unless the objective is changed. Prices above the average of the market are realized only through the creation of a real preference for the product handled. Such a preference can be built only on a belief in the honesty, uniformity and reliability of the product and on a proven reputation for business fairness. The development of a merchandising policy which will assist in creating this preference is one of the most important tasks facing co-operative organizations today.

At the present time too many associations are merely order takers. Little effort has been made to merchandise the products they have to market, or even to study what the various market outlets demand, what grades and varieties are best suited to the needs of the particular groups of consumers, and how much any one group will absorb at a given time and price. Only when the factors which influence this absorbing power are fully understood can a merchandising program be worked out which will develop confidence in an association and its product and tend to build up a trade which will continue to look to that particular organization as a satisfactory source of supply. Once a real merchandising program has been developed, it tends to attract customers whose business becomes attached more or less permanently. Sales to regular customers are the least costly, inasmuch as sales resistance has been greatly lessened through continued satisfactory relations. It is evident then that co-operatives must seek out means of furnishing services to the buyer of such high quality that premium prices will be paid for the products handled.

A rather common tendency among co-operative organizations is to hold back sales when prices are rising, in the anticipation of securing even higher prices. In consequence, the commodity is usually withheld from the market when the demand is greatest and then, after the price breaks, is forced into consumptive channels in an effort to dispose of it at once and avoid further declines. Such a course tends to a limited extent to accelerate the rate of decline and possibly to force prices down somewhat below the point which would be reached under normal conditions. The result is that an undue proportion of the crop is sold on declining markets and the prices obtained are almost certain to be somewhat less than the average. It is always easier to sell produce on a rising market, for then the demand is strong and there is a tendency for buyers to be less critical of deliveries. Marketing policies which include selling during periods of rising prices, and diminished activity during downward swings, will result in a satisfactory average price.—*A. V. Swarthout, United States Bureau of Agricultural Economics.*

THE WENATCHEE District Co-operative Association, Wenatchee, Wash., is opening on July 1 a sales office in New York City. This office is being opened with the object of promoting increased use of Wenatchee grown apples in New York and nearby fruit consuming centers.

Sidney Carnine, who has been located at Wenatchee as sales manager for the association the past year, will become manager of the new office. He will be general supervisor of all sales throughout New York state, New England, eastern Canada and other markets within easy reach of New York City. He has had many years of experience in eastern markets and is well qualified for this task.

C. W. White, who has been general manager and treasurer of the association, will assume the additional duties of sales manager. He has been connected with the association for three years and is familiar with all phases of selling apples, having had 12 years of experience in the Wenatchee district.

The opening of the sales office in New York and the placing of a paid representative there will shorten the route of sale between the growers and consumers, according to President J. H. Auvil. The association for some time has been looking forward to the time when such a move would be justified. The new departure will bring about a saving in sales costs, as well as promote increased use of Wenatchee applies in the eastern part of the country.

THE ANNUAL meeting of the National Pecan Growers' Exchange, Albany, Ga., was held on May 18. Directors were elected for the coming years as follows: C. Kirkpatrick, J. B. Wight, H. W. Smithwick, J. A. Kernodle, H. H. Nichols, Ray C. Simpson, Frank H. Wood, C. A. Newcomer and William P. Bullard.

The directors re-elected William P. Bullard as president and general manager; C. Kirkpatrick as first vice-president; and Harold B. Taylor as secretary and treasurer.

President Bullard, in presenting his annual report, made the following statement:

"I am an optimist on the pecan industry. I believe that a pecan orchard of the proper varieties for the location; and planted on proper soil; and given proper care and treatment throughout, will be the best investment that one can make in agriculture. Yet we cannot escape the fact, however, that there are too many poor nuts produced—some of it caused by poor varieties, some of it by poor soil and some of it, probably the most of it, by lack of proper care and attention. A man yesterday told me of a large orchard in Alabama formerly owned by a widely known pecan man; but the son had neglected the orchard and it was now growing more weeds and briars than good nuts. If the pecan business were not good and great and strong, it could not easily survive the damage that follows from sore spots like that."

The exchange has increased its membership 20 per cent during the past year. It is gradually becoming an important factor in the handling of the pecan crop of the South, which is increasing rapidly in size each year. It is taking an important part in the promotion of improved grading methods as well as in developing better methods of marketing. It is reported that the annual meeting was a distinct success from every viewpoint and that growers who attended were thoroughly satisfied that the exchange is now on a sound footing.

THE ILLINOIS Fruit Growers' Exchange has employed H. W. Day to take charge of its production and standardization department. Mr. Day has had experience as a member of the Department of Horticulture of the

University of Illinois, as county agent in Cook county, Illinois, and as head of the standardization and inspection department of the Illinois State Department of Agriculture. He resigned the latter position to take up the work with the exchange.

In connection with his new duties, Mr. Day will work among the managers and members of local associations and assist them in producing high class products and in grading and packing them to the best advantage.

Illinois is expecting a peach crop of anywhere from 3000 to 5000 cars this year. The acreage of peaches has been greatly increased and the setting of fruit this season is good in practically all sections. The exchange is also expecting to handle a considerably increased tonnage this season. A. B. Leeper, manager, estimates that the exchange will market from 500 to 750 cars of peaches in the Centralia district alone. In addition, the organization expects to market a considerable tonnage of peaches and other fruits from other sections of the state.

THE RECENT annual meeting of the California Prune and Apricot Growers' Association was one of the most satisfactory and harmonious ever held by the organization. The annual reports of J. M. Parker, general manager, C. D. Cavallaro, president, and Warren E. Hyde, chairman of the voting board, showed a sound condition of the association. The policies now being followed of quick turnover, economy in operation and prompt returns to growers have saved thousands of dollars for the members on the 1925 prune and apricot crops. New records in economy of operation have been made. The apricot clean-up was the earliest in the history of the association. The prune crop of 1925 has been entirely sold out. Mr. Parker promised that the final prune payments would be in the hands of the growers by July 15.

The following were elected as directors for the coming year: W. J. O'Connor, W. A. Yerxa, M. E. Phillips, H. C. Dunlap, A. R. Thomas, Edwin Quinn, C. D. Cavallaro, Frank T. Swett, J. O. Hayes, Hugh Hersman, George Glendenning, Waldo Rohnert, A. L. Shively, William Pearce and R. E. Hyde. All of these men served the past year with the exception of Edwin Quinn and William Pearce, who were elected to fill vacancies. Warren E. Hyde was re-elected as chairman of the voting board, and H. N. Schroeder was re-elected as secretary of the board. Likewise, C. D. Cavallaro was re-elected as president, Joseph M. Parker was reappointed as general manager, and Joseph T. Brooks was continued as secretary of the association.

THE WENATCHEE District Agricultural Credit Corporation ended its first year of operation on March 16, 1926. During the year it made loans to its members to the extent of $349,885. Crop mortgages were given as security, and the interest rate was six and one-half per cent. There were 66 loans, ranging from $30,333 to $125. The length of time varied from two months and 27 days to seven months and 13 days, averaging four months and 14 days. The last loan from the Intermediate Credit Bank was closed out and paid on February 10, 1926.

Prevention of Grape Diseases

(*Continued from page 4*)

ly and thorough. Since the presence of moisture is necessary for the discharge of the spores of the fungi causing the various diseases, it will thus be seen that in order to successfully protect the vines and fruit from infection it will be necessary to have them covered with the fungicide *before the spores are shed during rainy periods, instead of afterward*, so that their germination and the resulting infection can be prevented. A little attention devoted to the weather forecasts will render this possible. It has been shown that Bordeaux mixture properly made and applied will be washed off only slightly after a continued rain of 24 hours. It is important that as much of the entire surface of the foliage, shoots, canes and fruit be thoroughly coated but the vines should not be oversprayed. In spraying vines in foliage, it is important that the spray should be directed upward from the nozzle held beneath the vine, as well as directly at the vine.

Dusting in Grape Disease Control

Now that the control of the fungous diseases and insect pests of the grape by spraying has been discussed, it might be well to discuss briefly their control by dusting with powdered spray materials. Fungicides and insecticides in dry, finely powdered form have long been used in disease and insect control, especially on low-growing plants. A steadily increasing interest has been manifested of late in the use of dusts for the control of these troubles, and extensive experiments have been made to determine the efficiency of such treatments. The materials now employed for vineyard dusting are mostly finely ground, dehydrated copper sulphate, arsenate of lead, arsenate of lime, sulphur and tobacco. The sulphur, and sometimes others of these dusts, often contain a diluent or filler, such as hydrated lime or gypsum. Various ready-mixed combinations of fungicides and insecticides in dust form are now on the market. In the use of dusts, too much emphasis cannot be laid on the necessity of employing only extremely finely ground materials, since the finely divided materials will adhere to the parts of the plant dusted while the coarser materials merely roll off and are of little or no value.

Dusts More Expensive but Easier to Apply

In general it may be said that dusting has proved considerably more expensive than liquid spraying. On the other hand, applications of the dust mixture can be made in a much shorter time and more thoroughly than can spraying. Other points in favor of the dusting method are that the handling of a large bulk of water is eliminated, as well as the time involved in diluting solutions and filling the tank, the outfit is less expensive, and fewer operators are required for application. Moreover, the time of application is not limited by soil conditions, inasmuch as the lightness of the outfit permits its transportation at all times; also, vines on rough or hilly ground, or in localities remote from an adequate water supply, may be protected without unusual difficulty. Even though the dust method should prove considerably more expensive from the standpoint of the cost of materials, the great saving of time, and especially the ability to cover large acreages at critical periods in a minimum of time, would, in such cases at least, largely offset the increased cost of the dust mixture.

Thus far, however, but little attention has been bestowed upon the use of dusts in vineyards as compared to their use in orchards and on truck crops. In general it may be stated that while in many cases the dusts seem to give as good control of diseases and insects as do the liquid sprays, in others, notably certain fungous diseases of orchard fruits, dust preparations rank below the liquid sprays in the efficiency of their control. Sufficient experimental work has not yet been done with the new dust materials to show definitely their value in the control of various diseases and insect pests in vineyards under variable weather and climatic conditions, or their adhesiveness as compared with that of the liquid spray materials. The conservative vineyardist, therefore, under ordinary conditions, should continue to use liquid sprays until the status of the dust spray has been more fully determined.

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The Orchard Home Department

By Mary Lee Adams

Love of Gardens Increases

DID YOU ever see so many announcements of flower shows as you read last spring? It seemed to me every little place I'd ever heard of, and many I'd never heard of, were holding flower shows. Each one gave me a sense of satisfaction. Nothing could prove more conclusively that we are gaining a greater appreciation of the value of flower gardens.

This will surely add to the richness of life. America winces under the reproach of being a money-loving land. The almighty dollar is believed abroad to govern our every thought and action. But if we become a race of gardeners, it will take away this reproach.

We may, as a people, fall below others in artistic ability. Pre-eminence in music, in painting, in sculpture, even in literature, is sturdily claimed by those who regard us as money-grubbers. But blooming dooryards give an unanswerable assurance that we are susceptible to beauty.

It is not the handsome grounds of millionaires that prove this. There ostentation may enter in as a motive. In such homes may be found books that are never read, pictures of great price that the owners couldn't tell from a colored photograph, musical instruments that their unskilled fingers never touch. But when there are flowers around every cottage door, it is a spontaneous blossoming of the soul of a people.

A Plea for Easy Chairs

WE TOOK a long motor drive through the country on a warm Sunday afternoon recently and saw whole families taking the air on front porches. This should have been a most restful sight, but on the contrary it left me with a crick in the back. Scarcely a comfortable chair was to be seen.

Old and young were perched precariously upon hard-seated, stiff, upright, armless chairs, and to tell the truth, those who were seated looked less at ease than such unconventional individuals as frankly lolled on the steps or propped their backs against the porch posts. Many old men, whose appearance suggested a hard week of work and a need of repose, sat rigidly, bolt upright and weary, while an agile youth twirled nimbly on one leg of the offending seat and won a frown from the cautious housekeeper.

It would seem that the object of chairs is to save one from standing indefinitely. Work in the country is laborious for man and woman. Of all extravagances, the least costly and the most rewarding is a chair that will rest your poor bones instead of making each of them ache separately.

Children will scarcely stay in one place or position long enough to make it essential for them to have provision made for hours of ease, but grown-ups (and the longer they've been grown up the greater the need) demand repose when supposedly resting from work. Why not make birthday, anniversary or Christmas gifts of good "sittable" chairs?

Why We Leave Home

ONE OF the most consistent "Trippers" I have known was, nevertheless, devoted to her home. When "the Red Gods called" from forest, stream and hill, she obeyed some seemingly but half-understood urge which could be allayed only by change of scene. She would go reluctantly and always return gladly—but she went.

On the eve of one of her periodic spring flights, I caught her scribbling on a torn scrap of paper and found she was expressing puzzlement at her own actions in words which, while not poetry, were yet not quite prose. "When I go away, when I lock the door of my little home, I turn a key in my heart upon a thousand memories—so sweet, the dearest in all the world. Yet I lock the door and go away."

A real home becomes an almost sentient part of the home-maker and severance of the tie is painful. A friend who occupied my own little home during my temporary absence wrote: "This is the loveliest place I know to be, but, after all, it is a sort of shell of you and empty without you. The very sofa pillows seem to need your pat to make them sit up in the mornings."

We live in a restless age. Few of us, especially under the onset of "wanderlust" are satisfied to stay quietly at home, year in and year out, as a former generation did. We are consumed with the desire to see the wide, wide world, or at the very least to get to some nearby resort.

There we may be fully as hot and uncomfortable and spend more money than we would at home, but we are jolted out of our rut. The deadly monotony of daily routine is broken. We bring back what artists call "a fresh eye" to the aspects of home that had begun to pall. A little trip often acts as a wholesome tonic.

We've All Had Them

MUMPS, measles and whooping cough have claimed most of us who are now full grown. It is quite evident that we survived them. From this it is argued by some physicians that it is much better to allow children to take them as they come since they "go harder" with adults than with young children.

Those who like to follow the path of least resistance will probably give heed to this advice. But who shall decide when doctors disagree? We know beyond question that the most frequent cause of adult death in the United States is heart disease. We are furthermore told that "it usually starts in childhood or youth from infectious diseases which are preventable."

So fully impressed with this danger was the conference of state and providential health authorities of North America that, at their last conference in Atlantic City, the congress passed a resolution condemning what they called the "archaic suggestion" to allow such childish diseases to take their course.

The resolution further "urges the parents everywhere to do everything possible to prevent their children from acquiring or spreading disease." It asserts that "the lowering of heretofore ordinary diseases of childhood is one of the chief gains in public health in recent years, and if continued and extended and coupled with periodic examination of the apparently healthy, will extend the span of life and longer maintain health and usefulness."

The argument for shielding our children from contagious childish diseases seems to me unanswerable.

Mid-Summer Suggestion

HEAT and dustiness begin to mar the freshness of all the pretty hangings with which we begin the spring. Yet winter is still far away. If your window curtains have lost that look of snowy freshness which made them look so cool and inviting, they may be washed, dried and dipped in cold coffee. If the color appears too deep, rinse them in cold water. Or they may be boiled in strong cold tea to which a tablespoonful of salt has been added. Either process will produce a very delicate, agreeable tint that will harmonize with almost any color scheme.

"Hubby, do you love me?"
"Yes."
"How much do you love me?"
"How much do you need?"—*Louisville Courier-Journal.*

The Old, Old Story

THE TROUBLE began long ago. "I don't know what's come over the hired girls these days," sighed Eve to her Edenless Adam. "They're so lazy and discontented and impudent and ——." Well, Mrs. Fruit Grower's Wife, you know the rest of that sentence by heart even if only by hearsay from neighbors.

Hired girl, help, cook, domestic, nurse-maid, slavey, a rose by any other name, they're all, if we may judge by the bitter lamentations of disappointed housewives, a sore trial. That opening sentence of Eve's goes on to say, "and what's more, if you do succeed in getting a good girl, she won't stay. You can't keep them for love or money."

There being at the very least two sides to every question, we may safely guess that the hired girl, on her side, is throwing some such verbal bouquets as "Mean, stingy, cross, old thing! There's no suiting her. An' what does she think I am anyway?"

There's something wrong in a situation where employer and employee harbor such sentiments toward each other. Perhaps, as some advanced thinkers maintain, the whole system is wrong and the housewife should do every bit of her own work.

Many do, but few from choice. In the large household overflowing with its hungry men at work, with its hungry children at play or school, with its incessant demand for meals, for clothes, for care of the poultry, care of the dairy, for attention along a thousand lines, it is almost as unreasonable to demand that the wife and mother do without help as to insist that the husband and father should till no more acres than he can individually cultivate and harvest.

Often, if the establishment is to run on in any semblance of comfort and efficiency, the housewife needs help. Things being as they are, it is up to her to solve the so-called servant problem as painlessly as possible.

It's a Vexed Question

Sometimes we think that, in addition to the worthy school courses in household economics, there should be a special post graduate course in domestic psychology, for, you see, it's human nature that enters here just as importantly and far less simply than the mere weighing of eggs and butter, heating of ovens or properties of milk.

The orchard home, as a rule, is either servantless or boasts but one, yet there are as many distinct and separate problems as there are mistresses and maids. Moreover, conditions vary with locality. The hired girl of the Middle West is far removed from the frankly menial class of colored servants in the South. Whereas household labor is abundant in some places, in others it appears practically hopeless to secure it.

Then, too, we've seen women so successful in retaining the same servant year after year that, when some crisis like the death or marriage of the faithful aid occurs, we are surprised to witness a rapid succession of obvious misfits. This has a sobering effect upon the lady who had assumed that she simply had a talent for "getting on" with servants, quite overlooking the fact that not every servant might "get on" with her.

A Touch of Nature

With all its annoyances, the relation of mistress and maid may be, and frequently is, a most pleasant one. In such cases, observation leads me to suppose that the woman who is paid for her services is made to feel the employer's individual interest in her comfort and welfare.

Of course, the country is somewhat handicapped by its inaccessibility to urban amusements. But when the single farm servant leaves from sheer lonesomeness, it's not so much lack of entertainment as because "nobody seems to care." A touch of sympathy with her joys and sorrows, a little concern for her comfort and consideration for her convenience, may go further than a higher wage.

In a rural neighborhood, there was one woman who could always secure the services of a small boy once a week to rake, run the lawn mower and tidy up the dooryard. "Lucky woman! How does she do it?" sighed the envious.

Then a chance passerby one afternoon saw her beckon the little fellow, offer him a glass of milk and tuck a couple of cookies into his fist as she said, "I guess you're hungry, Joey, after pushing that lawn mower."

"What a funny woman you are," called the passing friend. "Do you always serve afternoon tea to that boy? I never heard of such a thing!" "Well, I do generally," admitted the lady with a blush. "He gets so warm and tired, and he's still young." "Yes, and you get your yard tidied, which the rest of us can't. It's cheap at the price."

The Servant's Room

I'd call it a fine investment to make the resident help's room as attractive as circumstances permit. Many mistresses say, "It's as good as they have at home" and forget that home is glorified by the presence of loved ones and its lacks softened by the soothing touch of familiarity.

If the strange room has a degree more of comfort or of beauty than the accustomed one, if it be kept strictly for her use alone, a place where she can get away to herself now and then, it forms a valuable tie in keeping the girl satisfied.

Children in the Home

Children seem to be not nearly the handicap in holding a servant that the extra work they occasion might lead one to expect. Many times servants are held in the same place year after year from the babyhood of some precious child, because they cannot bear to leave the creature so endeared to them.

Mothers do well to teach children to be courteous and considerate to the servant, if only as a part of that self respect which well-bred people feel they owe to themselves in their conduct toward others, and especially toward their social inferiors.

A point often disregarded is the servant's need of some little time each day when she may count on being free from call. Usually "time off" is agreed on beforehand, but everyone is the better for a clear breathing space, however short, between breakfast and bedtime. That's one reason you, Madam, so much need some woman to help you. She longs for the same refreshment. It's as much mental as physical.

Mistresses frequently err by needlessly calling for some trivial service at a crucial moment in the kitchen, or by irritating criticism at an inopportune moment. Almost invariably more is gained by praise than blame. Bread seldom fails where the cook hears you boasting of her skill. An untidy servant, when complimented on some unusual neatness, often takes the hint kindly.

The Golden Rule Works

Tact, tons of it, patience, kindliness (not familiarity), are invaluable assets to the woman who wishes to have and to hold a servant. How much wisdom there is in our old nursery rhyme—There was an old woman and what do you think? She lived upon nothing but victuals and drink. Victuals and drink were the chief of her diet, and yet this old woman could never be quiet.

In briefer and more forceful phrase, the Bible tells us: "Man doth not live by bread alone. At best, the bread eaten among strangers as a wage, tends at times to have a bitter taste. Sweeten it with understanding."

Packing House Construction and Arrangement

(Continued from page 3)

growers interested in such a proposition are concerned in the success of their venture, they will be very certain that if an investment of up to $10,000 is contemplated, the tonnage is signed up for a sufficient length of time to write off the investment.

A second essential and probably the most important is experienced packing house management. Enough has been said on this subject to fill volumes, but it will pay any grower or group of growers, figuring on a central packing house, to stress this point with extreme care. Problems involved in the operation of packing houses are much more intricate than packing the fruit in the orchard or on the ranch. They must be taken care of in an adequate manner, or failure is certain.

Construction, Arrangement and Equipment

Perhaps more growers are interested in a plant representing a modest investment than in the larger and more elaborate type of community packing houses. Growers, or companies, sufficiently financed to invest in large, expensive plants are usually in a position to secure competent advice. The small packing house, therefore, is of more immediate concern, and in this type of plant California and the Northwest are perhaps pre-eminent. The construction and arrangement of a packing house depends almost entirely on the kind of fruit to be handled. A grape house, for instance, is quite different in character than one for the handling of apples and pears. The equipment for packing cherries varies considerably from that required for preparing peaches and plums for market, and so on.

The modern idea is to build a house of a type to accommodate the equipment; the old idea was to build a plant and then put the equipment into it. In the various variaties of tree fruit, such as plums, pears, peaches and apples, there has been developed in recent years a number of different types of grading equipment. Probably the most successful graders for this type of fruit have been of two kinds; first, a grader which sizes the fruit by the so-called weight or specific gravity method, such as the apple grader used so extensively in the Northwest, and, second, a newer type of machine which has gained much headway in California for pears, plums, peaches and like fruits, based on the divergent rope principal.

This latter type of grader has come into very wide use on the Pacific Coast, especially during the last two years, and practically all packing houses now being erected for such fruits as mentioned above include as the first unit in their equipment one of the various makes of divergent rope graders. These graders are very simple of operation; they usually include a sorting table consisting of one or two moving belts from six to eight inches wide, with a return belt for culls. The belts feed into a set of divergent ropes from 30 to 40 feet in length over all, gradually moving apart as they move to the end of the table. The fruit is sized, therefore, by diameter. In the case of pears, the fruit rides through stem end downward and simply drops through the ropes when it can move no further.

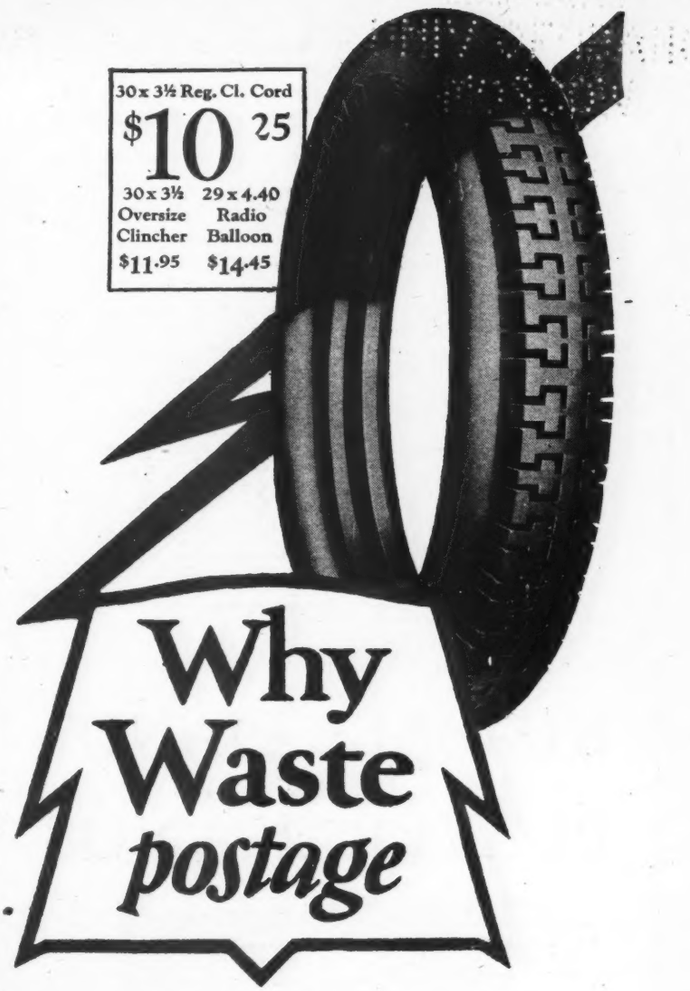
A packing house with a volume of approximately 50 cars should have one machine of this type. A standard machine measures, including the sorting table, approximately 60 feet over all. The packing house itself, therefore, should be at least 60 feet long. Naturally, if such equipment is installed, the house should be somewhat longer than 60 feet, for the fruit has to be assembled at the head of the grader and re-assembled by sizes when packed out at the foot of the grader preparatory to loading the cars.

Packing houses for tree fruits in California are for the most part of the smaller type and are usually nearly square in dimensions. A plant 50 by 100 feet, however, is often used but is usually built on a unit system so that it may be extended and enlarged if additional equipment or graders are installed. Such a plant should have a sawtooth roof type of construction, which, while a little more expensive, admits of more light and makes the work of grading and packing much easier, as well as more efficient. The windows in the sawtooth type should face in the direction designed to secure the most uniform light, and in rainy districts, if possible, away from prevailing winds; the roof should be so constructed as to eliminate as many posts as possible on the packing floor. Such a model plant should have a concrete basement for the storing of shook. The house should be built on a railroad switch so that shook and box material may be unloaded directly into the plant; a chute should be arranged so that box materials and other supplies may be sent to the basement by gravity without extra handling. The basement should be properly lighted and wired, as should also the main packing house floor. All boxes may be "made up" where the shook is stored in the basement.

A simple type of box elevator which may be purchased for $75 to $1.00 at

(Concluded on page 25)

Interior of a California packing house, showing fruit conveyors and sizing machine



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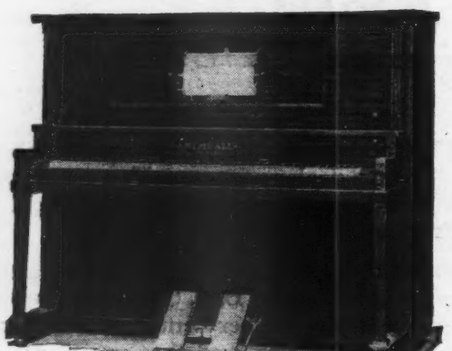

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CHATS WITH FRUIT GROWER'S WIFE

By HAZEL BURSELL

Prepare to Enjoy the Summertime

THE SUMMERTIME should be a season of joy and happiness for every inhabitant throughout this broad land of ours, from Maine to California, from Florida to Oregon, and "all way points." Especially should those who are close to Mother Earth look forward to the summer with its wealth of flowers, fruit and scenic beauties. The horticulturist should be the happiest of men.

If we do not know how to enjoy the summertime, there is something wrong with us, and it's time we mended our ways.

Live Simply, First Law

"Live simply!" That is the first rule for happiness in any season or any clime, but it is of prime importance in hot weather. Rich, heavy foods, cumbersome clothing, and a house crowded with massive furniture and too many useless small articles are not conducive to summer comfort. And comfort is essential to a happy frame of mind.

To begin with, we should make our houses appear just as cool and restful as possible. We may take down heavy window drapes and hang some cool and airy looking marquisette, dotted Swiss, Monk's cloth, Japanese crepe, or cretonne curtains in their places. These summer curtains may not cost much, but they will change the whole appearance of the home. Upholstered furniture is always "clinging" and warm feeling in the summertime, but this can be remedied by making slip-on covers of glazed chintz or cretonne to harmonize with the summer curtains. The curtains and chair covers can then be folded and put away in the fall for the next summer season. Your winter drapes will retain their beauty and freshness longer if they are carefully stored instead of being exposed to the midsummer sun. In the long run, you will save money as well as add to your joys of living, by using summer curtains and chair covers.

May Store Large Rugs

Many housewives prefer bare painted, waxed or varnished floors during July and August, to the customary carpet or large rug. They clean the room-size rug, roll it up and store where no moths or mice will destroy it. Then they use in its place two or three small rugs, depending on the size of the living room. In this way they spare themselves much unnecessary sweeping and dusting, and at the same time secure a cooler-looking room.

Fresh flowers, nicely arranged in appropriate bowls and vases, are absolutely essential to Ye Editor's enjoyment of the summer. Heavy-headed flowers, such as zinnias, require a large, massive-looking vase. Short-stemmed flowers require a bowl with a frog to hold them upright. Long sprays of flowers or mixed bouquets look their best in graceful baskets. But the important thing is to use only fresh flowers—a withered bouquet can spoil the effect of an otherwise charming room.

The rooms should be cleared of all useless small articles. One or two good pictures, a few books, the mantle clock and a vase or two for flowers are all that are necessary during the summer. Bric-a-brac merely clutters up the room and makes more work in dusting and cleaning.

Eat Fruits and Vegetables

The planning and preparation of meals is an important item in hot weather. Avoid rich foods and live simply. Serve plenty of fresh fruits and vegetables and meat not oftener than once or twice a week. Salads, cold meats, frozen or fruit desserts and ice-cold drinks are most popular for summer. By careful planning and swift work in the morning, the housekeeper should get most of her cooking done for the day while it is still cool. Then she is free to enjoy herself, and the house will be cool during the afternoon and evening.

An ice box or refrigerator and a fireless cooker are great helps to the housewife. Ice-cold fruits, salads, melons and beverages are possible only by the aid of a refrigerator. Many "ice-box" desserts can be prepared in the morning for the evening meal and set in the refrigerator to finish. The ice box will also keep butter, milk, cream and other foods in first-class condition for several days. This is an economy, as it prevents waste of food. Whole meals may be cooked in the fireless cooker, with little or no attention and expense and without heating up the house.

Wear Comfortable Clothes

Comfortable and becoming clothes are essential to a woman's happiness. If possible, the summer sewing should all be done early in the season so My Lady will be at leisure later. House dresses should be as crisp and pretty in their way as are the "Sunday-go-to-Meetin' gowns." They should be pretty in color, short-sleeved, short-skirted and collarless for perfect comfort, though each woman should consider her individual figure and coloring in choosing the material and pattern. Comfortable, low-cut oxfords, sandals or slippers should be selected.

Have a Flower Garden

The homemaker should have begun early in the spring and even the previous fall to develop her flower garden for the summer. It should be in such shape that it will require little attention except for watering and the removal of seed pods and weeds during hot weather. She should have a continuous succession of blooms, some old favorites and some new ones, which she may enjoy in her garden or pick for the house and her friends. Some real, honest-to-goodness shade trees will bring their owner great joy, both for their beauty and the protection they afford from the heat. Climbing vines add to the coolness and beauty of the home.

Awnings striped in gay colors for windows and porches on the sunny side of the house will pay for themselves many times over in enjoyment. Hammocks, canopied lawn seats, and other appropriate outdoor furniture will bring pleasure to kiddies and grown-ups alike.

The homemaker should subscribe for some good magazines which publish articles and stories interesting to her. She should also take out a card for the nearest county or city library, or for a state circulating library. If she enjoys some kind of "pick-up" work, she may provide herself with light hand sewing, crocheting or embroidering. A radio should add to the family's enjoyment of the summer, though reception is not so good during the summer months.

Cultivate your friends. Invite them over to hear a radio concert, or to see a new flower in your garden, or to sew and chat with you. Entertain in your garden under your shady trees. Serve them iced tea, lemonade, a fruit

ice, or something equally simple and cool. Go to no extra trouble and see how much real pleasure you can get out of your friendships in this way.

Plan Various Outings

The real secret of summer enjoyment and the thing that makes work a pleasure is to have at all times some jolly plans to which the family may look forward. Everyone gets up early and the work gets done as if by magic when there is a picnic, motor trip, swimming party, circus or baseball game planned for that week. All work together with a will and then all are off on the anticipated pleasure jaunt! Life never lacks zest for a family that works and plays like this, and they accomplish just as much as if they worked from dawn till dark, seven days a week.

If the farmer and his family can arrange to leave the ranch long enough for a real vacation, so much the better. Perhaps some of the children are old enough to assume the responsibility of the farm while Dad and Mother take a much-needed vacation. If this can be arranged, they should plan a real trip to some famous beach, river, lake or national park. They should carefully assemble a complete and compact camp outfit, containing all necessary things and not one thing that just "might be needed," load it in the car and be off.

If a real vacation is not possible, a series of well-planned short trips to various near-at-hand points of interest will serve just as well and may be even more interesting. Remember to leave all surplus baggage at home. The most enjoyable trips Ye Editor has ever taken were those on which she didn't have even a toothbrush or spare handkerchief till she reached the first stopping place.

Daily Baths Essential

Daily swims, baths or showers are absolutely essential to summer comfort. Two or three a day will be better. Every man, woman and child should learn to swim and swim well. It is easier to learn when young but it is never too late to learn. If all could swim there would be very few drownings. Besides, it's the best sport there is for summer.

But above all, don't worry about anything!

Alarm Clock Useful

AN ALARM CLOCK is an indispensable part of the kitchen equipment in the modern home. It may be adjusted to ring when the cake must come out of the oven, the baby fed (if the baby doesn't sound his own alarm), or the potatoes put in with the roast. So important has it become in modern cookery that one manufacturer is installing a well-known variety of alarm clock on his kitchen cabinets. The clock would not need to be wound clear up each time. A few jingles of the bell would be sufficient.

Recipes for Raspberry Desserts

ONE OF the real joys of the summertime is the large variety of deliciously flavored fruits, especially the berries of all kinds. Raspberries are a favorite with many persons. They make up into beautifully colored jelly and preserves. They may easily be canned and stored for use when the snow flies. Then, too, they make delightful desserts, either with the fresh or canned fruits.

Raspberry Whip

1¼ c. raspberries — 1 c. powdered sugar
White of 1 egg — ½ c. whipped cream

Put ingredients in bowl and beat with a wire whip until stiff enough to hold in shape. About 30 minutes are required for beating. Whip the cream separately and fold in at the last. Pile lightly in a dish lined with lady fingers or strips of sponge cake and chill. Unmould on the serving plate and garnish with sweetened whipped cream.

Raspberry Shortcake

Make a shortened, slightly sweetened baking powder biscuit dough, and bake in thick layers that may be split. If individual shortcakes are desired, bake in two-deck arrangement in the shape of large-sized biscuits. Spread the lower layer with butter before placing the top layer. Pick over, wash and slightly crush sufficient raspberries to put between layers and to cover the top well. Let stand for 20 minutes with sugar to sweeten. Put together just before serving and while the cake is still slightly warm. Spreading the layers with butter before adding fruit improves the flavor. Garnish with whipped cream, or serve with rich cream.

Raspberry Ice, No. 1

4 c. water — 2 c. raspberry juice
1½ c. sugar — 2 T. lemon juice

Make a syrup by boiling water and sugar together for 5 minutes, add lemon juice and cool. Add raspberry juice, squeeze through cheesecloth and freeze.

Instructions for Freezing.—Crush the ice well. Place in a sack and pound with heavy maul. Fill center container two-thirds full of prepared ice or ice cream mixture and fasten lid securely in place. Set center container in place in freezer and surround with mixture of crushed ice and coarse salt, in the proportion of three parts of ice to one of salt. Turn until frozen and let stand in container until wanted. Then carefully remove all ice and salt till well below the top of the center container, to prevent any foreign substance getting in the ice cream. Remove lid with care and dish up into sherbet glasses. A small commercial ice cream dipper will be found very useful in this connection.

Raspberry Ice, No. II.

1 qt. raspberries — 1 c. water
1 c. sugar — Lemon juice

Sprinkle raspberries with sugar, cover and let stand 2 hours. Mash, squeeze through cheesecloth, add water and lemon juice, then freeze. Raspberry ice prepared in this way retains the natural flavor and color of the fruit.

Raspberry Ice, No. III

2 c. raspberry juice — Sugar
2 c. water — Lemon juice

To juice drained from canned raspberries add the water. Then add sugar to sweeten and lemon juice to taste. Freeze, pack in salt and ice and let stand one hour.

Raspberry and Currant Ice

4 c. water — ½ c. raspberry juice
1½ c. sugar — 1½ c. currant juice

Prepare and freeze as for Raspberry Ice, No. I, by making a syrup of sugar and water, cooling, adding fruit juices and straining through cheesecloth. Put in container and freeze. Then pack in ice and let stand till wanted. Serve in glass dishes with small wafers or cookies.

Raspberry Sauce

½ c. butter — 1½ c. powdered sugar
¼ c. raspberry syrup

Cream the butter, add sugar gradually while stirring and beating constantly. Then add raspberry syrup slowly at first, drop by drop, to prevent separation. Serve with bread pudding, Indian pudding, cottage pudding, rice, etc.

Raspberry Syrup

2 qts. raspberries — 1 qt. sugar
¾ c. cold water

Pick over and mash raspberries, sprinkle with sugar, cover and let stand over night. In the morning add water, bring slowly to the boiling point and cook 20 minutes. Force through a double thickness of cheesecloth and again bring to the boiling point. Fill small glass jars to overflowing, and quickly adjust covers. This sauce is delicious as a foundation for beverages, raspberry ice, or for sauces to accompany hot, cold or frozen desserts. Try it with vanilla ice cream.

Raspberry and Currant Preserve

6 qts. currants — 6 lbs. sugar
8 qts. raspberries

Pick over, wash and drain currants. Put into a preserving kettle, a few at a time, and mash. Cook one hour, then strain through double thickness of cheesecloth. Return to kettle, add sugar, heat to the boiling point and cook slowly 20 minutes. Add one quart raspberries when syrup again reaches the boiling point, skim out raspberries, put in jar and repeat until raspberries are used. Fill jars to overflowing with syrup, adjust covers quickly. It will be safer if the filled jars are heated in a water bath for 20 minutes before cooling and storing.

Raspberry Jam

Pick over raspberries. Mash a few in the bottom of a preserving kettle, using a wooden potato masher, and so continue until fruit is used. Heat slowly to boiling point, and add gradually an equal amount of heated sugar. Cook slowly 45 minutes. Put in a stone jar and seal with paraffin, or put in small glasses and seal with paraffin.

Raspberry Puffs

Roll plain pie pastry one-eighth inch thick, cut in pieces four by three and one-half inches and put on baking sheet. Put ½ t. raspberry jam on center of each piece (on lower half), wet edges halfway around, fold, press edges firmly together, prick tops, place on sheet, and bake 20 minutes in hot oven.

Table of Abbreviations

1 c. equals 1 cupful.
1 T. equals 1 tablespoonful (3 t.).
1 t. equals 1 teaspoonful.
1 lb. equals 1 pound (16 oz.).
1 pt. equals 1 pint (2 std. c.).
1 qt. equals 1 quart (2 pt.).

All measures are level.

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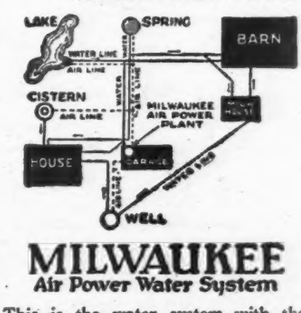

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Cover Crops for Citrus Fruits

By Bayard F. Floyd

Florida State Horticultural Society

CITRUS trees do best on the lands that have been properly built up by the addition of organic matter to the soil by either planted or volunteer crops. Some of the best fruit is produced on the hammock soils that are well supplied with humus and organic matter and in which the processes of decay go on normally and more or less continuously. There are few grove soils on the high pine lands that have at all as great an organic content as they should have for the best behavior of the trees.

The products formed by the decay of organic matter in the soil are the most valuable for tree growth and soil improvement. The addition of organic matter that has passed through the various stages of decay, such as muck, is not at all so good because the trees miss the direct and indirect benefits derived from the products of decay. Therefore, the growth of cover crops to be turned under and the spread of material that will decay are the best soil building practices.

The summer season is the proper time to grow the crops that build up the land. When the first summer rains come in May or early June, all cultivation is stopped excepting perhaps a narrow strip on each side of young trees, and the planted or volunteer crop in the middles is allowed to grow. In late August or early September, the crop is cut and allowed to lie where it falls. The only exception is where some particular spot in the grove has a very sparse growth. In this case, it is sometimes practical to rake the hay from places having the heaviest growth on the spots with the sparse growth, to help build up these areas.

The usual crops for soil building in citrus groves are velvet beans, cowpeas, beggarweed and crotolaria. Natal hay or any grass or weeds is valuable but not so much so as the legumes which add ammonia to the soil.

Velvet beans are planted more commonly between young trees. They may be planted either three rows to the middle with a planter or broadcasted. Where planted in rows, it is helpful to add a little corn with the beans in planting to provide a support for them to grow upon. They should be planted in March or April. Some plantings made in May do fairly well, but frequently fail to make sufficient growth.

The best varieties to plant are the Florida velvet bean and the White Chinese. The early speckled is a good variety for some sections but does not make the quantity of vine growth as does the Florida bean. The Florida bean should be planted early as it is a long season crop.

Good crops of velvet beans grown during two or three successive seasons on the land between young trees and turned under will put the soil in good condition and allow better growth and earlier fruiting of the trees.

Cowpeas make a good cover crop for either young or old trees. They are planted more often by broadcasting one to one and a half bushels to each acre in May just before the last cultivation. They are sometimes planted in rows, three to five to each middle. The Brabham variety is a good variety to plant.

Beggarweed makes a valuable and permanent cover crop; once the land is well seeded, it will appear as a volunteer crop each year afterward if handled properly. Cultivation should be practiced with care in the early summer after the first rains to avoid killing the young seedlings that come up at that time.

The crop should be cut in August and a second crop allowed to grow from the stubble. It makes an excellent hay but should be left on the land to act as a soil builder. The crop should be planted just previous to the last cultivation in the spring.

Crotolaria shows promise of being a very good cover crop, particularly on the lighter lands where other crops grow with difficulty. It will reseed itself if handled properly. For full information concerning this crop and where to obtain seed, write the Agricultural Experiment Station at Gainesville, Fla.—*Sunsweet Chronicle.*

The Peach and Cherry Crown Borer

THE PEACH and cherry tree crown borer has become quite abundant in Colorado orchards during the past few years, according to George M. List, chief deputy state entomologist of Colorado. The insect has become rather serious in eastern sections of the state. As many as five borers have been taken from the crown of a single small cherry tree.

All orchardists should examine their trees carefully each spring for this insect. The borer feeds just beneath the bark at the surface or just under the surface of the ground. The presence of the insect is indicated by the gummy mass that follows its injury.

"The most effective method of control is the treatment of the trees in the fall with paradichlorobenzene. This material is not effective in the spring of the year, but in many cases the infestation is heavy enough at that season to justify the orchardist going over the trees and digging out the worms. All should at least make a careful examination to determine whether the fall treatment will be advisable.

"The adult moths will emerge after the first of July. The paradichlorobenzene treatment should be applied after all eggs have been deposited and the small larvae hatched. In most sections of the state this will be during the latter part of September or early in October. The material is applied by making a circle of the crystals about two inches from the tree on the surface of the ground, after which the material should be covered with about four inches of dirt to hold the fumes about the crown of the tree where the small larvae are beginning to enter. From one-quarter to one and one-half ounces should be used to each tree, depending upon its size. Care should be used not to get the crystals directly against the tree as injury might follow."

DR. O. F. E. WINBERG, of Silverhill, Ala., writes us that Young dewberries grow quite successfully in his vicinity but that the berries are a little too tender for long distance shipment. He states that the berries are extremely juicy and will produce about three gallons of juice to a bushel of berries. The berries have a distinct raspberry flavor. Dr. Winberg believes that if companies or individuals interested in juice manufacture can be interested in this berry, methods can be worked out in all probability that will be beneficial to both juice manufacturers and growers. He would like to hear from any companies or individuals who may be interested in juice manufacture.

THE *Leavenworth Times* states that Thomas Bean, a nurseryman 57 years old, was sentenced to serve three years in the federal prison on a plea of guilty to charges of using the mails to defraud. The case was brought in the federal court at Kansas City, Kans. Judge John C. Pollock presided. Bean was given three weeks' stay in order that he might adjust some business affairs.

The defendant was charged with ordering shipments of trees and shrubs and then refusing to accept the order on arrival. The shipments were then placed on sale and Bean, according to the charges, employed an agent to purchase them at low prices.

Daphne—I say, Doris, I have an idea.

Doris—Be good to it. It's in a strange place.—*London Mail.*

Engineering for the Fruit Grower

By E. W. Lehmann

Electricity for the Farmer

CONSIDERABLE progress is being made in solving the problem of applying electricity to the operations in the farm home and on the farm. Evidence of this was given in reports made at a conference of agricultural publishers in Chicago recently. One of the drawbacks is the cost of electrical equipment; another is the cost of getting electric service. It seemed to be recognized by everyone that a real problem is to develop sufficient uses of electric energy on the farm to make the cost per unit sufficiently low so it can be used economically.

Electricity is the cheapest servant that can be secured for helping with the housework. No one apparently questions the part electricity has played, and will play in the future, in raising the standard of living. One of the striking statements made at the conference was that made by Dr. H. C. Taylor of Northwestern University. In commenting on the farmer's use of his profits, he said: "It is only when farmers use their profits to create a higher standard of living that they can really keep them. We have been told that we can't eat our cake and have it, but when farmers go without the good things of life in order to compete with one another more keenly, they lose their cake without eating it. When we make gains, we should nail them down by improving our standard of living.

"Most farmers have automobiles because they have made up their minds that they will not farm unless they can have them. When they reach the same conclusion about electricity, they will get it. The time will come when people will not live in the country unless they can have the great advantages that electricity makes possible."

I believe every reader of this magazine recognizes the fact that every farmer competes with every other farmer in production, also that the competitor in production who is willing to accept a low standard of living is the worst type of competitor. He may not produce more efficiently or more economically, but he is willing to continue to exist on a very small income and thereby lowers the standard of all.

One of the interesting papers presented at the conference touching on what electricity can do for the farm women was given by Mrs. Harry Reifsteck of Champaign county, Illinois. Mrs. Reifsteck is fortunate in being one of the farm women who is getting electric service from the Illinois experimental line. Through their co-operation with the Illinois Agricultural Experiment Station, they have secured the use of practically every type of electrically operated equipment designed for the home, including an electric range, refrigerator, cream separator, washing machine, ironing machine, iron, vacuum cleaner, percolator, toaster, etc. While most of Mrs. Reifsteck's statements praised the equipment and pointed out its advantages, she also called attention to the fact that the cost of cooking electrically was much more expensive than by the ordinary method. As to the piece of equipment which she favors most, she has this to say:—

"I have been asked, 'What piece of equipment would you keep if you could have only one choice?' That seemed difficult to answer after using all of these appliances, but after a great deal of thought I believe I would decide in favor of the washing machine. My answer may appear funny to some people; in fact, I know that some of my neighbors on our line would prefer other things.

"My reasons are, first, I have always considered washing as my most difficult task, and it seems only logical that some kind of power should be used. About the only other kind available on the farm is the gasoline engine. This is good, but I consider the use of electricity superior to it. For instance, the engine stops sometimes. Then it has to be cranked, and often it is too hard for me to crank it (I would much rather do my washing by hand). If the engine cannot be started, much time must be spent in finding someone who can start it or in finishing the washing by the primitive method.

"My washer is very efficient, easily kept clean, has all of the parts enclosed, has never gotten out of order and consumes very little energy. I would like to say here that the current has not gone off but once since I have been using my washer and that was for about 10 minutes."

A Good Poultry House Floor

SECOND grade hollow building tile make a very satisfactory floor for the poultry house. The first step in making a good floor is to thoroughly drain the sub-base. When block are used, place them evenly on a layer of sand, then cover with about a half-inch layer of rich cement mortar. This will give a smooth surface that is easily cleaned.

A floor that is practically as good as the tile, but less expensive, is made by using about eight inches of cinders, gravel or crushed rock, thoroughly tamped and covered with two inches of good concrete. Thorough tamping of the porous material is essential to get best results. It should also be wet down before putting the concrete in place.

Whether it is advisable to make the poultry house floor level or give it a slight slope is dependent on the location of the windows. With the shed type house and the windows on the front, a slope down of four inches in 20 feet from the back to the front of the house will be just enough to keep the litter evenly distributed over the floor. With a Missouri type poultry house, which has a gable roof and windows on all four sides, the floor should be made level, because there is no tendency for the hens to scratch the straw from the light side of the house, the light being from all sides.

A good time to take care of poultry house improvement is late summer and early fall, so the improvements will be made before the pullets are put into their winter quarters.

White Ants Cause Building Damage

DAMAGE to buildings running into thousands of dollars occurs each year in the United States caused by white ants or termites. The remedy is insulation by masonry construction, according to the United States Department of Agriculture. All untreated woodwork must be insulated from the ground to prevent the ants gaining access to it.

White ants have the peculiar habit of burrowing through the ground until they reach wood, and if the wood has not been treated with creosote, they literally eat it up. They burrow into the foundation timbers, joists and the floor, eating the inner part and leaving a thin shell. Often the wood is so weakened that it must be renewed at great expense. These ants will not enter woodwork when placed on a foundation of concrete; therefore, the remedy is to keep the wood from contact with the ground by masonry materials. One example of how these ants gained access to the woodwork of a house which came to my attention was through stakes that were driven into the ground by which the concrete floor was leveled when laid. One of these stakes was not removed and by chance a wood partition was built over it in the basement. The ants found this stake and used it as a path to enter the wood above, and the sills and joists were literally ruined.

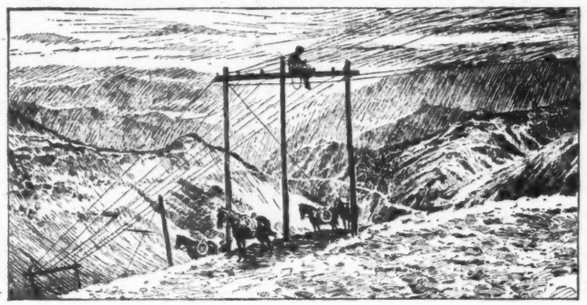
The ants will die if the path from the wood above, on which they depend for their food, to the soil below, on which they depend for their moisture supply, is destroyed. If bothered with ants the first step is to locate their path and destroy it.

Recently the Bureau of Entomology of the United States Department of Agriculture has been advocating the modification of the building regulations of various cities so as to include several simple rules to prevent attack by these insects. No floors, sills, beams, clapboard, etc., of untreated wood should be laid on or in the earth, and untreated beams must not be laid in concrete without at least one inch of concrete underneath and separating it from the earth. No lime mortar should be used in foundations or in cellar walls where they are in contact with the earth, since termites are able to penetrate lime mortar after some years' service. All brick work extending below the surface of the ground should be faced and capped with concrete at least one inch thick. These slight modifications of the building regulations of cities by city engineers would save much property as well as time and worry to householders. It is a form of house insurance. These same regulations would apply in building construction on the farm.

"The recommendation of the use of heat, steam, insecticides and fumigants against these subterranean termites is of no permanent value and is futile. If conditions in a building are unsuitable to termites they will leave; if they can be prevented from leaving or coming in again by shutting them off from the ground, nothing further need be done, and anything else, indeed, is only a waste of time and money."

PROF. W. H. ALDERMAN of the Department of Horticulture of the University of Minnesota is planning to spend most of the time during the coming year in studying the fruit industry in various sections of the country. He plans to travel by automobile, going first to the Pacific Coast, where he will spend about six months. He will then return by way of Texas and will visit Alabama, Florida, the Carolinas, the Appalachian section, New York and Michigan before his return. Without question Prof. Alderman will secure information on this trip that will make him even more valuable to American horticulture than he has been in the past. His family will accompany him during his studies.

Telephone line over the Rocky Mountains



The Builders of the Telephone

SPANNING the country, under rivers, across prairies and over mountain ranges, the telephone builders have carried the electric wires of their communication network.

Half a century ago the nation's telephone plant was a few hundred feet of wire and two crude instruments. The only builder was Thomas A. Watson, Dr. Bell's assistant.

It was a small beginning, but the work then started will never cease. In 50 years many million miles of wire have been strung, many million telephones have been installed, and all over the country are buildings with switchboards and the complicated apparatus for connecting each telephone with any other. The telephone's builders have been many and their lives have been rich in romantic adventure and unselfish devotion to the service.

Telephone builders are still extending and rebuilding the telephone plant. A million dollars a day are being expended in the Bell System in construction work to provide for the nation's growing needs.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY AND ASSOCIATED COMPANIES

BELL SYSTEM

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SPECIAL NOTICE

All advertising copy, discontinuance orders or change of copy must reach this office by the 10th of this month for next issue.

Address
AMERICAN FRUIT GROWER MAGAZINE
53 West Jackson Boulevard, CHICAGO

AGENTS—SALESMEN WANTED

AGENTS—NEW PLAN, MAKES IT EASY TO earn $50.00 to $100.00 weekly, selling shirts direct to wearer. No capital or experience needed. Represent a real manufacturer. Write now for real samples. Madison Factories, 500 Broadway, New York.

BIG MONEY AND FAST SALES. EVERY owner buys gold initials for his auto. You charge $1.50, make $1.35. Ten orders daily easy. Write for particulars and free samples. American Monogram Co., Dept. 92, East Orange, N. J.

EVERYBODY NEEDS FOOD, OUR PLAN GIVES customer better quality and lower prices. Representatives wanted. $100 a week and free automobile. Write quick. American Products Co., 427 American Bldg., Cincinnati, Ohio.

AGENTS $240 MONTH. BONUS BESIDES. NEW auto given. Introduce new guaranteed hosiery —126 styles, colors. Finest silks. Credit given. Samples furnished. Wilknit Hosiery Co., Dept. 504, Greenfield, Ohio.

MAKE $15.00 DAILY SELLING "FIXIT" RUBber Repair (liquid rubber). Doubles mileage of tires and tubes. Sensational seller and moneymaker of 1926. Sample free. Marquette Rubber Co., A-2327 Wolfram St., Chicago.

WOULD YOU RISK A 1C POSTAL CARD against a chance to make $5 to $15 daily during the next four months? If so, send name and address now to Macochee Hosiery Company, Card 2667, Cincinnati, Ohio.

MAKE YOUR AUTO LOOK LIKE BRAND NEW. Dri-Klean-It removes mud, dirt, dust. No soap or water used. Write for sample. Agents wanted. American Accessories Co., Desk 104, Cincinnati, Ohio.

BIRDS

BIRDS OF ALL KINDS. GET OUR LIST. Geo. Roll, Ames, Iowa.

CHICKS

QUALITY CHICKS. STATE ACCREDITED. Per 100: Leghorns, $9; Rocks, Reds, Anconas, $10; Orpingtons, Wyandottes, $11; Lt. Brahmas, $15; assorted, $7; large assorted, $9. Live delivery, postpaid. Catalog. Missouri Poultry Farms, Columbia, Missouri.

DOGS

HUNTING HOUNDS CHEAP; TRIAL. DIXIE Kennels, A-5, Herrick, Ill.

FARMS AND ORCHARDS

SPLENDID OPPORTUNITY IN SOUTHERN California to establish a home on a few acres that will insure you a good living in a delightful country. Lands reasonable, terms easy. Crops best suited for different localities well proved. Efficient marketing organizations. A climate you will like—enjoyable twelve months open season. Seaside and mountain resorts easily reached over wonderful roads. Illustrated folder free. C. L. Seagraves, General Colonization Agent, Santa Fe Ry., 942 Ry. Exch., Chicago.

CALIFORNIA POULTRY AND FRUIT RAISING —If you are interested now, or at some time in the future, in owning a profitable poultry farm, or fruit and poultry farm combined, in southern California, send for a copy of our booklet, "How to Go in the Chicken Business and How to Stay In." California Hotel Farm Company, 18 North Euclid Ave., Pasadena, California.

ORCHARD AND IDEAL SUMMER HOME ADjoining famous Bedford Springs Hotel. Illustrated folder. Bush C. Litzinger, Bedford, Penna.

FOR SALE—ONE OF THE BEST COMMERCIAL orchards in East Central Ohio. Henry Reiser, Tuscarawas, Ohio.

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$95.00 TO $250.00 MONTH. MEN-WOMEN, 18 up. U. S. Government jobs. Steady work. Life positions. Short hours. Paid vacation. Common education sufficient. 32 page book with sample coaching and full particulars—free. Write today sure. Franklin Institute, Dept. W-85, Rochester, N. Y.

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GIRLS-WOMEN, 16 UP, WANTED. LEARN gown making at home. Earn $35.00 week. Learn while earning. Sample lessons free. Write immediately. Franklin Institute, Dept. W-545, Rochester, N. Y.

MISCELLANEOUS

SONG POEM WRITERS—WRITE RAY HIBbeler, D-96, 2104 N. Keystone Ave., Chicago.

POULTRY

WHITE LEGHORN PULLETS, HENS, BREEDing cockerels. Ed Kroodsma, Zeeland, Mich.

WANTED

HYDRAULIC CIDER PRESS. D-71. AMERICAN Fruit Grower Magazine, Monadnock Bldg., Chicago.

WANTED—TO HEAR FROM OWNER OF LAND for sale. O. Hawley, Baldwin, Wis.

BIRTHSTONE
DIAMOND
4 RINGS FREE
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Birthstone. Initial Signet. Engagement and real Wedding Ring. 4 Gold Filled Rings FREE for selling $2 worth of Chewing Gum at 5c a pckg. No Extra Money.
GLUSINE MFG. CO., 1 Mill Street, Concord Jct., Mass.

Proper Fall Manipulations Bring Results the Next Summer

THE SEASON of 1925 will be long remembered by the beekeepers of the northern half of the United States as a big crop season, and the spring of 1926 will also be remembered, but for a different reason. The mortality of bees during the winter was unusually great, and this condition was more serious on account of the fact that the beekeepers in the South also had serious losses and experienced considerable difficulty in producing package bees for shipment in the spring. As a result, there were probably 30 per cent less bees in the northern states this season than in previous years. The main cause for these losses can be traced to lack of proper manipulations in the fall of 1925.

We have several times stressed the importance of producing an abundance of young bees late in the fall and providing an abundance of good stores for winter. This is extremely important in a year like that of 1925. The season was rather dry, and, as a result, plant lice increased in numbers, and great quantities of honeydew were produced by them and collected by the bees. Even small amounts of honeydew in the winter stores will cause some losses.

When honeydew is abundant and is mixed in with the winter stores, the beekeeper can guarantee that he will have anywhere from 25 to 100 per cent loss, unless he takes precaution to provide stores free from honeydew for winter feed. Reports from many localities the past spring show that a large number of beekeepers lost from 30 to 90 per cent of their bees. In nearly every case, dysentery was reported as the cause. In other instances, bees were reported to have come through the winter in good condition, but died after the spring flights. The reason for this condition is easily explained. Although the bees managed to survive the winter, they suffered from dysentery to such an extent that they were practically worn out when the winter was over, and there was only sufficient energy left to enable them to make the spring flight. Then they died because they were completely worn out.

It is a simple matter for the beekeeper to determine when honeydew is abundant, as it can be seen smeared about on the sidewalks and paths where it drops from overhanging trees. It is also a simple matter to remedy this condition by feeding each colony of bees from 10 to 15 pounds of sugar stores two or three weeks before they are put in winter quarters. Practically every beekeeper who fed sugar syrup to his bees last fall found them in excellent condition this spring. Over a period of years, every beekeeper will find it highly profitable to follow the practice of feeding sugar stores in the fall. The losses in bees for one season and the subsequent loss of surplus crop would easily pay for the necessary sugar to feed for two, three or even four years. The manipulations to be followed are simply to see that the bees have plenty of stores during the month of September and the first part of October to continue rearing brood as late as possible in the fall.

If a beekeeper is in a locality where a regular fall flow occurs, then his problem is greatly simplified, because the bees will be able to secure sufficient stores in the field for the necessary rearing of young bees. In those sections where no fall flow occurs, there should be from 25 to 50 pounds of stores in the hives at all times.

Young Queens Important

The age of the queens also plays an important part in the securing of young brood in the fall. Queens should never be retained for more than two years, and requeening each year is quite desirable. After the young bees have been secured in the fall, then it is necessary to see that the proposed healthy stores, free from honeydew, are provided for the bees during the winter months. Experiments have shown that the bee cellars and winter packing are relatively unimportant, provided the bees are young and the winter stores good. Year after year many colonies of bees are permitted to sit in the open without protection of any kind, and in spite of very low temperatures which these colonies have to pass through, they may come through the spring strong and produce surplus crops.

Sugar Syrup for Feeding in the Fall

Sugar syrup, unless properly made, cannot be thoroughly ripened by the bees, or it may crystallize in the combs, so that the bees have difficulty in using it for food during the winter months. Experimental evidence shows that two parts of sugar to one part of water by weight makes the most desirable syrup for fall feeding.

In making the syrup, add the sugar to the water and heat until the solution clears, or to the point where the solution just starts to boil. Then remove from the fire, add a teaspoonful of tartaric acid to each five gallons, and feed as needed.

One of the most satisfactory ways of feeding sugar syrup is to cover the top of the hive with a board having a hole about the size of a five or 10-pound pail. Make a few very small holes in the cover of the pail, fill it with syrup, replace the cover and invert over the opening in the feeding boards. If feeding boards are not available, then use several thicknesses of burlap or newspaper in which an opening to fit the feeding pail has been cut. These materials may be laid over the frames and an empty super set on top to protect the feeder. It is considered good practice to warm the syrup slightly before feeding.

Feeding should be done before very cold weather begins, in order that the bees can easily take down the syrup and thoroughly ripen it. If an examination of combs is made after the feed has all been taken down, the syrup will be found in that section of the brood chamber where the bees have their cluster and where the winter stores will be used.

For fear that some of our readers may conceive the idea that the beekeeper is likely to use syrup in producing honey, we wish to say that, although adulterated honey made from sugar syrup had been found previous to the enactment of our national Pure Food Law, this practice has been completely done away with and the consumer may be assured that all the honey he buys in the market is the pure nectar of flowers and free from adulteration. Bees, in changing sugar syrup to honey, reduce the amount by about half, and it is therefore unprofitable for a beekeeper to follow the practice of making sugar honey, even though he may wish to do so.

Each colony of bees uses from 25 to 30 pounds of honey during the winter period, and therefore any small amount, such as 15 to 20 pounds of sugar syrup, fed to a colony of bees in the fall, will be completely used up by the time the bees start work in the spring.

Some Beekeeping Bulletins Which Every Beekeeper Should Have

WRITE to your representative or senator at Washington, D. C., and ask him to have the following bulletins sent to you. You will find some very interesting information in each of these bulletins.

The Flight Activities of the Honeybee—United States Department of Agriculture, Department Bulletin 1328.

The Effect of Weather Upon the Change in Weight of a Colony of Bees During the Honey Flow—United States Department of Agriculture, Department Bulletin 1339.

The Brood-Rearing Cycle of the Honeybee—United States Department of Agriculture, Department Bulletin 1349.

The Color Grading of Honey—United States Department of Agriculture, Department Circular 364.

The Sterilization of American Foulbrood Combs—United States Department of Agriculture, Department Circular 284.

A honey recipe book based on restaurant uses is being published by a woman at Madison, Wis. This is the first time in history that such a work has been attempted.

Peaches and the Peach Industry

(*Continued from page 5*)

practiced for a long time in handling sleeping cars in the passenger service. This system of private refrigerator car service prevails today.

Mr. Thomas began this type of management in the spring of 1887 in shipping strawberries from western Tennessee to Chicago. At first, owing to the distrust of the shippers, it was necessary for him to buy the fruit before they would consign it for shipment by this method, but a few demonstrations proved its effectiveness and it soon gained the confidence of the growers.

This type of refrigerator car service was an object of suspicion at first wherever it was offered. Some of the cars were taken to California in 1887, where the shippers reluctantly tried them, but their success that year and the following one was sufficient to establish their value in getting such fruits as apricots and cherries into eastern markets in good condition. Prior to this, shipment of deciduous fruits from California to the East had been in ventilated cars with no icing.

Mr. Thomas applied this system of transporting peaches from Michigan in 1889. Prior thereto, the Michigan crop had been consumed largely in Chicago and Milwaukee. Following the experience of these first two or three years, the expansion of the new system of refrigerator car service was rapid, and the service soon became what it has continued to remain, a highly essential adjunct to the commercial fruit industry. Without it, the great expansion of the peach industry in Georgia, which began in the early nineties, could never have developed; and what is true of Georgia in this respect is just as true of Texas and North Carolina, and the Grand Valley in Colorado, the Pacific Coast, and many other sections

While the refrigerator car equipment is still imperfect, and while many problems remain unsolved, steady progress is being made in the improvement of details of construction to the end that the perishable products of the farm may be delivered to the tables of consumers in the best possible condition.

You Can Now Sell Undergrades at TOP PRICES

THE small fruit and sound windfalls you formerly sold at a low rate can be turned into profits. You can now make them into pure, sweet cider, and apple butter, jelly, vinegar, and the other apple products made from cider. And when you do you turn your undergrades into marketable commodities that enjoy a year 'round market—*at tip-top prices.*

Mount Gilead
HYDRAULIC CIDER PRESSES

Built by an organization with more than fifty years experience in the field, Mount Gilead Hydraulic Presses are famous for thorough, effective pressing that extracts all the juice from apples, cherries, grapes and other small fruits. They develop a greater pressure and produce a larger yield of juice than any other cider press on the market. There is a Mount Gilead press for every requirement including roadside, orchard, and custom pressing work.

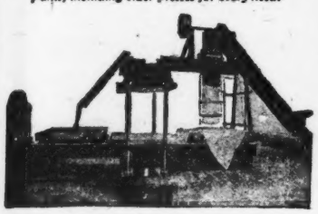
The Mount Gilead Process

Along with the Mount Gilead Line of Hydraulic Cider Presses has been developed the Mount Gilead Process of refining apple juice. This remarkable process, perfected by experts after years of experiment, produces high grade pure cider that stays fresh and sweet the year 'round without the use of preservatives or other adulterations.

If you want bigger profits from your orchard write us today for the book "A Golden Harvest from Undergrade Apples." It fully describes Mount Gilead Hydraulic Cider Presses and the Mount Gilead Process—and why they are money-makers for you.

THE HYDRAULIC PRESS MFG. CO.
Originators of the Hydraulic Cider Press
80 LINCOLN AVE. MOUNT GILEAD, O.

The most complete line of machinery for fruit products plants, including cider presses for every need.



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Who prefers restful and homelike atmosphere. Just a short walk from the business, shopping and theater districts, yet away from the downtown noise and congestion.

RATES:
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All Outside Rooms All With Baths

Peterboro at Woodward
Glendale 8870

Cut Picking Costs!

One more fruit from your orchards by having less bruised fruit. Cut picking costs by cutting picking time. Pick your fruit with this Pennsylvanian pattern FRUIT PICKER. Made of heavy 10-gauge galvanized wire electrically welded and soldered. Smooth joints throughout. Picks fruit up to 6 in. in diameter. Can be used from a ladder or with a long pole from the ground. At your hardware dealer's for 75c.

12 Inches High
6 Inches in Diameter

SEND NO MONEY
If your dealer does not happen to have the FRUIT PICKER in stock, we'll mail you one C. O. D. Pay postman $1. The extra 25c is for packing and postage.

DEALERS—Write for our proposition.

THE CENTRAL WIRE FRAME CO.
154 East 23rd St. Dept. 7 NEW YORK CITY

Packing House Construction and Arrangement

(Continued from page 19)

any reputable packing house machinery company should connect the basement and packing house floor. It has been the experience in California that such box elevators save from one to two cents in handling charges. Usually, these box elevators are so placed that if graders or packing benches are used, the packers on the floor above are kept supplied with empties all of the time. In the pear, peach and plum grader of the divergent type, a set of wooden tracks is placed on the floor underneath the packing benches. These tracks are kept filled with empty boxes, and when filled the automatic elevators from the basement are cut out.

In connection with grading tables of the divergent rope type, it is the custom to use packed box conveyors for moving the fruit to the lidding machines. These conveyors are of many types and kinds, and the cost varies according to how elaborate the equipment may be. Probably the most practical and satisfactory type of conveyor is the so-called canvas belt type which simply consists of a heavy canvas belting over wooden rollers, either on six-inch or eight-inch centers.

Lidding machines for pears, peaches and plums and similar tree fruits are also of many different styles and kinds, ranging in type from home-made machines, costing from $12 to $15 up to automatic machines costing many thousands of dollars. The most practical, economical type of lidding machine for the small plant costs from $75 to $100.

The illustrations accompanying this article will perhaps give a better idea of the arrangement and floor plan of a small plant than it is possible to convey through descriptive phrases and terms. The following figures and list of equipment may be of interest in this connection:

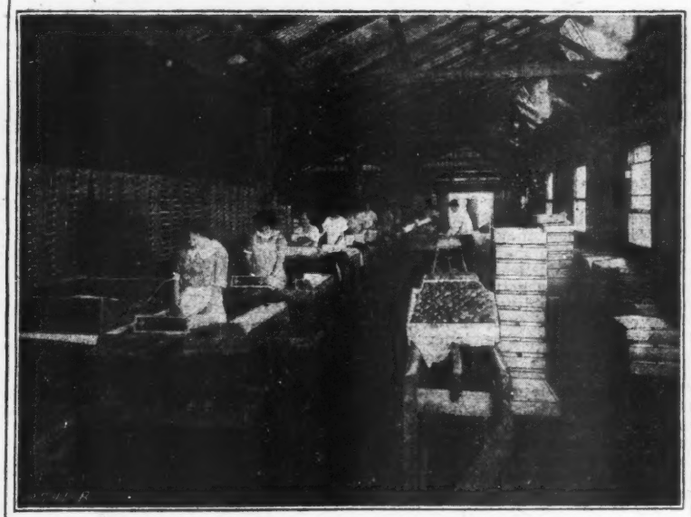
Estimated Cost and List of Equipment for Central Packing House for Handling Deciduous Tree Fruits.
(50-car plant.)

Building	$2,500
Grading machine	800
Two lidding machines for packed boxes	150
Two automatic box elevators	150
Fruit trucks for floor work, three at $30	90
Cut-off saw for car bracing material	200
Miscellaneous	150
Total	$4,040

Automatic conveyors may be dispensed with at the start in houses of moderate size. If deemed advisable, they may be purchased at $3 or $4 a foot for the best type.

For about $5000, a modest plant capable of handling 50 cars may be built, but it should be remembered in figuring operating costs that interest at current rates should be charged plus depreciation. A simple, practical manner of paying for the plant over a period of years is to fix a package charge for handling the fruit sufficient to pay operating costs plus a small sum to take care of principal, interest and depreciation.

In conclusion, it should be remembered that no piece of machinery will run by itself. A packing house is no exception; in fact, it is a complicated and intricate piece of machinery. If handled with care, it will run like clock work. It is easy, however, to throw a "monkey wrench" into the structure. Probably the safest advice to growers who are hiring a manager is that they take care to employ a man of ability and then leave him alone.



Packing California plums for eastern shipment. Note the saw tooth truss construction. The "spider" or "runway" for packed boxes as here shown is cheaper than the automatic, canvas-covered, roller conveyors. Note the construction of the packing tables which are used in place of grading machines

New Insect in Wenatchee

EDWARD TRUMBLE, horticulturist, announced at Wenatchee (Washington) recently that he had discovered a new orchard pest in the form of a moth entirely new to the apple orchards of that district. The moth is small, being less than half as large as the codling moth, he said. It is almost black, with numerous gray hairs on the wings, which are distinctly marked with a pale yellowish-white on each wing that greatly resembles a boot.

"The larvae of the moth cocoon in the bark of the trees are similar to the codling moth," said Mr. Trumble. "The larvae of this moth change to small and slender pupa cases and pupate into moths about the same time the codling moth pupates. This new moth mates soon after emerging and lays its eggs in cracks of the bark, but some eggs are deposited on the bark.

"Females start laying eggs late in the evening and deposit them quite rapidly until after dark. They are laying eggs in great numbers each evening now. I have had the moth under observation for several weeks. Since eggs are laid on the trees and the worms cocoon on them, it is natural to believe the worms feed on the trees. I found this pest in only two orchards in the valley so far."

"He thinks I'm the nicest girl he ever met. Shall I give him a date?"

"No. Let him keep on thinking."—*Rutgers Chanticleer.*

Fair femininity switches cigarette smoker to a pipe

Her plea, "Smoke what dad smokes," wins Ed Maher over to a certain tobacco

It is always interesting to hear how pipe smokers come to discover their favorite tobacco. Some come to it accidentally, some on a friend's recommendation, some after "trying 'em all."

But here's a new one. Ed Maher, a student of the University of California, frankly admits there's a "she" in the case. And to her he gives the credit for his present pipe-smoking enjoyment.

Read what he says:

Larus & Bro. Co.
Richmond, Va.

Gentlemen:

I happen to be a student at the University of California, and since I first started to smoke, I have always smoked cigarettes.

One day SHE said to me, "Ed, dear, why don't you smoke a pipe? I think those long straight stemmed pipes are so much more manly-looking than cigarettes."

So, naturally, I had to buy a long-stemmed pipe and a can of—well, we'll call it "Blubs Mixture tobacco." Immediately with a certain feeling of pride in my new pipe, I "lighted up" and proceeded to have my tongue bitten. I tried almost every brand I had ever heard of, but none satisfied me.

Sadly, I had to confess to HER that as a pipe smoker I was a good dietitian.

"Did you try Edgeworth?" she asked. "That is what dad smokes, and he's always smoked a pipe."

So to make a long story short, I was forced to try Edgeworth, and all that I can say is that if every fellow that has tried to accustom himself to a pipe, started with Edgeworth, there would be very few that would go back to cigarettes.

Yours sincerely,
Ed Maher, 1731 Hayes St., San Francisco.

To those who have never tried Edgeworth we make this offer:

Let us send you free samples of Edgeworth so that you may put it to the pipe test. If you like the samples, you'll like Edgeworth wherever and whenever you buy it, for it never changes in quality.

Write your name and address to Larus & Brother Company, 13S S. 21st Street, Richmond, Va.

We'll be grateful for the name and address of your tobacco dealer, too, if you care to add them.

Edgeworth is sold in various sizes to suit the needs and means of all purchasers. Both Edgeworth Plug Slice and Edgeworth Ready-Rubbed are in small, pocket-size packages, in handsome humidors holding a pound, and also in several handy in-between sizes.

To Retail Tobacco Merchants: If your jobber cannot supply you with Edgeworth, Larus & Brother Company will gladly send you prepaid by parcel post a one- or two-dozen carton of any size of Edgeworth Plug Slice or Edgeworth Ready-Rubbed for the same price you would pay the jobber.

On your radio—tune in on WRVA, Richmond, Va.—the Edgeworth station. Wave length 256 meters.

Profitable Poultry

By Ralston R. Hannas

Culling

THIS is the month when poultry keepers should take stock of their chickens and "separate the goats from the sheep," or, in other words, cull their birds. Egg production has no doubt been falling off during the past month, in some cases faster than in others. It will continue to fall off, too, right along. This means, then, that there are a number of hens in the flock that are not laying, but are eating feed just the same.

These birds that have stopped laying may be easily detected and removed from the flock and sold for meat, thus saving on the feed consumed, getting just as many eggs, and getting a cash return for the birds sold as meat. The hen that has stopped laying shows the following characteristics: her comb shrivels up, becomes dull in color, takes on a whitish powdery covering, and is dry; her vent, instead of being moist as when she is laying, becomes puckered, dry and hard, and her skin in the region of the vent becomes hard; and she may start to molt, for the early molters are the poor layers. Furthermore, there are certain changes in color of the skin pigment that indicate whether or not a hen is laying, that is, for all breeds that are naturally yellow skinned, such as the Leghorns and other Mediterranean breeds, and the American breeds, as the Plymouth Rocks, Wyandottes, and Rhode Island Reds. A hen that has been laying has the color bleached out in all the sections, but when she stops, the yellow color appears in the following sections in the order in which they are mentioned: vent, eye ring just inside the eyelid, ear lobe (in the case of birds with white ear lobes, as the Leghorns), beak and shanks. It takes from two to three weeks for the color to return in the various sections, that is, about two weeks for it to return in the vent, two to three weeks longer in the eye ring, two to three weeks longer in the ear lobe, and so on, so that by the time the color has appeared in all sections, including the shanks, the bird has stopped laying for three months or longer. General health and vitality should, of course, also determine whether or not a bird ought to be kept. If a bird is unhealthy or does not show the proper amount of vigor, she should be culled out of the flock.

The entire pen of birds should be caught up and each one handled during the culling process. Culling may be done at night, but it is not always satisfactory, since the pigment color cannot easily be detected unless a flashlight with a daylight bulb, that is, a blue bulb, is used. It is better, therefore, to catch them all up in the daytime, using as many coops as are available to hold the birds. It may take all morning to cull the hens, handling and examining each one, but it is worth it, since, at the first culling of the season, probably half the flock may be discarded, with a resulting saving of half the feed that has been used up to the present time, a cash return for the fowls, and *no reduction in the number of eggs received.*

This first culling should take place about the first week in July and should be continued throughout the summer, until September, at intervals of two or three weeks. Birds may be removed in the meantime, of course, if it is noticed that they have stopped laying, but it is just as well to take these all out at once at a regular culling.

This culling process should also be carried on with the growing stock. It will undoubtedly be noticed that there are certain birds among the pullets that will not be suitable to put in laying quarters in the fall. There is no use, then, in feeding these right up to the end if they are not worth keeping. The same plan can be carried out with these growing pullets as with the adult birds, going through the flock every two or three weeks, eliminating those that are not worth saving. Of course, the same characteristics cannot be judged as with the adults, but health, vigor, proper growth, shape, color and so forth can be the guides as to whether or not a pullet should be saved.

Blood Spots

IT IS very likely that a number of blood spots will appear in the eggs that are laid at this time. This may be especially so in the case of farmers who are feeding mash and grain according to the up-to-date approved system. If such spots appear in a number of eggs, the cause generally lies in the fact that too forcing a feed is being fed; either the birds are eating too much mash, or they are getting too much meat scrap in the mash, or they are getting too much milk in addition to the meat scrap in the ration.

These things can all be adjusted easily. If the hens are fed grain at the rate of eight or nine pounds per 100 birds per day, they will eat mash enough to balance their rations properly, and a person need not fear that their birds will be getting too much mash. There should not be more than 20 per cent of meat scrap in the mash. There is sometimes a tendency to increase the amount of meat scrap in the ration at this time of the year when production is dropping off. The purpose of doing this, of course, is to maintain production by increasing the amount of the protein. The ration should not contain more than 20 per cent of meat scrap, however, as more than that amount is too forcing a ration. If milk in any form is being fed in addition, either the milk should be eliminated from the ration or the meat should be cut to 15 per cent.

If only a few eggs are obtained with blood spots, say one a week, no alarm need be felt, since this is probably due to the weakness of some individual bird, and nothing can be done to prevent the blood spots. It is only when a number of these blood spots appear that some action, as outlined above, should be taken.

These spots are due to the rupture of a blood vessel in the ovary or oviduct of the hen. These small clots that form as a result of the ruptures accompany the yolk down the oviduct and are enclosed in the egg. If these spots are localized, that is, limited to a certain section of the egg, they may be removed and the rest of the egg eaten; if, however, they are generalized, that is, distributed throughout the whole egg, the egg is unfit for food.

It is well to arrange some method for candling all eggs that are sold at this season of the year—or any season, for that matter—so that customers will be sure not to get any of these eggs, for the average consumer does not understand how these things can happen and will not believe that the eggs are fresh when they contain blood spots. Eggs that are held before a candling device and twirled around show these spots as reddish tinted spots or streaks. If the blood is diffused throughout the whole egg, the egg has a red tint throughout.

Heat Prostrations

THERE are apt to be losses during severe heat spells due to heat prostrations. These are not so likely to occur on general or fruit farms where the birds have free range, having access to plenty of shade, or where there is plenty of shade in yards, if hens are kept fenced in. There are many yards, however, where there is very little or no shade for the birds and the houses or sheds are poorly ventilated, so the hens have very little relief from the intense heat. Under such conditions, prostrations are likely to occur.

When a hen is suffering from the heat, as can be noticed by her ruffled feathers and by her panting and by the fact that she is generally lying on the ground or floor, she should be removed immediately to some cool place and her head and legs sponged with cold water. Let her lie in the shade and if she is not too far gone when discovered, she will come around all right. Frequent applications of cold water will help her to come around.

It will help considerably if the nests are arranged in the cool part of the house; they should not be right in the sun, as in some houses, for it is while the hens are on the nests that they are generally prostrated. This is because they are not where they can get the breeze. Generally, if the air is stirring and the birds are out of the sun, there is not much danger. If the houses are hot in spite of everything that can be done, it will help if the house can be raised about a foot from the ground so the birds can get under it and have this protection. Of course, where the hen house is a large one, it is not possible to do this, but where the house is a small one, this can be done to good advantage. Needless to say, fresh, cold water should be kept before the birds all the time. The water pans ought to be emptied three or four times a day during these extra hot days.

Housing

NOW IS the time to repair houses and to build any new ones, or make additions to old ones. This is especially true if an increased number of pullets is to be kept and the pullets are to be put in the houses in the fall. In this case, the plans should be worked out in advance and the houses should be constructed in the fall. Unfortunately, it sometimes happens that while these houses have been started in plenty of time so they *ought* to be ready for new pullets, the fact is they are not always ready when they should be and the birds are left to take care of themselves out-of-doors.

This is not a good thing for the pullets, for they should be in the houses as soon as the first eggs are laid. If they are not, and are allowed to stay on range, there is apt to be a neck molt shortly after they are put in the house, with the result that egg production is checked when it ought not to be. Furthermore, if the poultry is permitted to stay out until the nights get cold and damp, colds and roup are apt to develop. Prevent all this now.

Essentials in Strawberry Culture

(*Continued from page 7*)

are about to fruit. Many roots are superficial, and it is in general considered bad practice to break the roots by any cultivation or hoeing.

Renewal of Fruiting Fields

In many if not most of the larger strawberry sections of the country, the plantations are kept until they have produced two to four crops. Such sections are those from which carload shipments are forwarded to the general markets. In market garden sections, the fields are less likely to be kept for more than one crop. Market gardeners are accustomed to frequent rotation of crops and plan to rotate their strawberry plantings frequently.

When the strawberry field is to be kept for a second crop, it should be kept free from weeds; in particular, it should not contain white clover, sorrel or other weeds that make above or underground runners that are so difficult to eradicate. It does not pay to renew very weedy fields.

The important part of the renewal of the beds is the mowing of the foliage which, to a strawberry grower, is a common practice in much of the country. A mowing machine is most commonly used for this purpose. Experimentally, Mr. Brown of the Hood River Experiment Station has proved that better results are secured when the foliage is mowed. New foliage appears in a short time after the mowing, and the plants grow vigorously for the remainder of the season.

In addition to mowing the foliage, many growers plow one side (about half) of each row, leaving the remaining plants to send out runners and form a new matted bed. After plowing up half of the rows, hoes or a harrow are used to thin the plants in the row so that fewer old and more new plants will produce the crop the following year. Whether to thin at all, and how much to thin, will depend on the conditions in each field. If the soil is fertile, the soil moisture supply ample, the variety a good runner maker, and a good stand of new plants is quickly formed, the thinning may be severe. In other cases, however, little or no thinning may be advisable.

Some growers fertilize their fields at the time they renew them, and for most conditions, as far as we know, this is probably the best time. Commercial fertilizers containing acid phosphate and a rather slowly acting nitrogenous carrier are probably as effective as any. The rate of application varies from 200 to 1000 and even 2000 pounds per acre. Probably 400 to 700 pounds of such a mixture are most commonly used, though larger amounts would probably pay in many fields.

The above picture shows how runners are sometimes spaced. The center row of plants was set originally, and runners from these are being made to form new plants at well placed intervals as a result of systematic spacing

Growers should remember that some varieties make a rank growth and any application of fertilizer containing nitrogen would probably cause such a rank growth as to lessen the crops. Other varieties appear to need some nitrogen-containing fertilizer.

A HORTICULTURAL Field Day was held by the New Jersey College of Agriculture and Agricultural Experiment Station on June 16 at New Brunswick. In addition to demonstrations and talks given in connection with vegetables, a tour was made through the apple and peach orchards of the station. Growers were particularly interested in the improved peach varieties developed by the station experts. Short talks were given on a number of fruit subjects of importance by M. A. Blake, A. J. Farley, T. J. Headlee, William H. Martin, L. A. Stearns and Ray Hutson. These were followed by spraying and dusting demonstrations of various types of sprayers, dusters, spray guns and nozzles. These were used on apples and peaches.

"The man who hides behind a woman's skirt nowadays is not a coward. No, sir, he is a magician."—*Boxes.*

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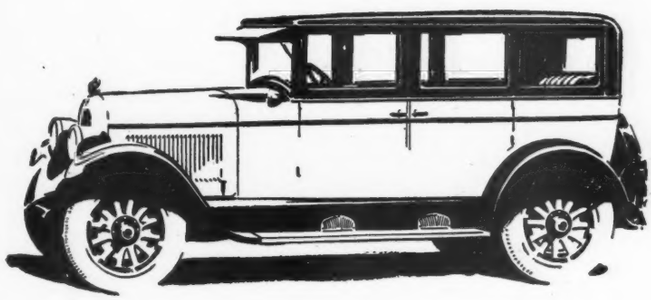

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